

MORPHOPHONEMIC PROPERTIES OF
COWICHAN ACTUAL ASPECT

by

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A B S T R A C T

A morphonemic analysis of Cowichan Actual aspect is presented. Actual aspect in the Cowichan dialect of Halkomelem is analysed as an inflectional category of verbs, akin to the imperfective in Indoeuropean languages. The shape which the Actual aspect assumes is conditioned by the phonological shape of the root. Actual aspect is manifested in //CVC// roots by reduplicative prefixation, a partial copy of the root. Roots with the shape //CVCC// undergo ablaut (vowel change), while //CC// roots undergo vowel insertion and ablaut. The related morphophonemic processes of Resonant Glottalization and Resonant Devoicing are also discussed. Rules which account for the shapes of the Actual aspect, Resonant Glottalization, and Resonant Devoicing are formulated.

Included are an introduction, which presents the Cowichan sound system and discusses the more general properties of Cowichan verbs, and an appendix, which provides a distinctive feature matrix of Cowichan phonological segments.



TABLE OF CONTENTS

LIST OF TABLES	v
ACKNOWLEDGEMENTS	vi
SYMBOLS	vii
CHAPTER I BACKGROUND	1
.1 Linguistic Setting	1
.1 Position Within Salish	1
.2 Location of Speech Area	2
.3 Number of Speakers	2
.2 Previous Studies of Cowichan	2
.3 Data Sources	3
CHAPTER II INTRODUCTION TO THE PHONOLOGICAL STUDY	5
.1 The Cowichan Sound System	5
.2 General Properties of the Verb	10
.1 Inflectional Morphology	11
.2 Lexical Suffixes	25
.3 Stress and Vowel Reduction	26
.1 Stress	26
.2 Vowel Reduction	27
.3 Chapter II Summary	31
CHAPTER III THE PHONOLOGICAL STUDY	33
.1 Actual Aspect	34
.1 Vowelless Roots	37
.2 .1 //CVCC// Roots	47
.2 //CVC// Roots	50
.3 Long Vowel Forms	58

CHAPTER III (cont.)	
.2 Resonant Glottalization	62
.3 Resonant Devoicing	65
.4 Rule Ordering	69
CHAPTER IV SUMMARY	83
FOOTNOTES	85
BIBLIOGRAPHY	92
APPENDIX	95

LIST OF TABLES

I	Kava's Phoneme Inventory	6
II	Contrastive Segments in Cowichan	9
III	Rule Order	80
IV	Tentative Distinctive Feature Matrix of Cowichan Segments	96

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SYMBOLS

//	//	underlying form/root
/	/	systematic phonemic form
[]	1. feature, phonological or lexical 2. phonetic form 3. lexical item
<	>	co-occurrence relation
{	}	morpheme
()	optional element
-		1. reduplicative prefix boundary 2. lexical suffix boundary
+		grammatical prefix/suffix boundary
#		word boundary
C		any consonant (unless indicated otherwise)
V		any vowel (unless indicated otherwise)
C _i		i th consonant in a prefix/root
V _i		i th vowel in a prefix/root
α		variable value, + or -
₁ Subscript		identity across a rule
~		pharyngealized phone

CHAPTER I
BACKGROUND

I.1 Linguistic Setting

I.1.1 Position Within Salish:

Cowichan is the westernmost dialect of the Halkomelem language. The dialects of Halkomelem form a chain extending along the Fraser River from Yale, British Columbia, to the coast at Vancouver, British Columbia, and across Georgia Strait to the eastern shores of Vancouver Island.

Thompson (1973: 981-2) classifies Halkomelem as a member of the Central Coast Salish branch of the Coast division of the Salish Language Family. Other Central Coast Salishan languages are Twana, Puget Sound Salish, Straits, Nooksack, Squamish, Seshelt, Pentlatch, and Comox. Of these Squamish, Nooksack, Pentlatch, and Comox are geographically contiguous with one or more Halkomelem dialects.

Cowichan's immediate neighbours are Nanaimo (Halkomelem) to the north and various dialects of Straits Salish to the south. On the east and west Cowichan is isolated from any immediate neighbours. To the east lies the Strait of Georgia, with Musqueam (Halkomelem) being spoken on the opposite shore. In the west lie the mountains which form the backbone of Vancouver Island. This geographic obstruction afforded the Cowichans and their neighbours a high degree of isolation from the Nootkan-speaking communities on the western coast of the island.

I.1.2 Location of Speech Area:

Elmendorf and Suttles (1960: 1) place the original home of the Cowichan speaking people on Southeastern Vancouver Island in the valley of the Cowichan River and on the islands around the river's mouth. Earlier accounts of ethnic distributions support this observation.¹

The largest concentration of Cowichan speakers is now located in an area extending from Mill Bay north to Nanaimo and Nanoose Bay. The Cowichan speech area now encompasses the indigenous home of the Nanaimo-speaking people. Cowichan is also widely spoken by Straits people in the Saanich, Songish, and Sooke areas of lower Vancouver Island.

Differences between the Nanaimo and Cowichan dialects are few. There is some variation in vocabulary and a few phonetic differences exist in the articulation of vowels.

I.1.3 Number of Speakers:

Chafe (1962: 165-6) states that one to two thousand Halkomelem people remain. Most are bilingual, speaking Cowichan and English and those people who do not know Cowichan speak English. The population estimates for the three dialect areas now within Cowichan territory are: Cowichan - 500 speakers, Chemainus - 300 speakers, and Nanaimo - 150 speakers.

I.2 Previous Studies of Cowichan

Linguistic material on Cowichan is limited. Early

published work is represented by two word lists (Tolmie and Dawson (1875), Donckele (1882)) and by a short list of re-duplicated forms which appears in Haeberlin's "Types of Reduplication in the Salish Dialects" (Haeberlin (1918)).

Recently Cowichan has enjoyed more attention. An article by Elmendorf and Suttles (1960) surveys the phonological systems of some Halkomelem dialects, including Cowichan. Elmendorf (1962) published a paper dealing with lexical relations between Cowichan and Musqueam. Tiiu Kava (1969) produced a Master's thesis at the University of Victoria dealing with the phonemes of Cowichan. A later work by her, Kava (1972), discusses vowel length in Chilliwack (Halkomelem) and contains lexical data from Cowichan.

Further material on Cowichan exists in the form of papers presented at various annual meetings of the International Conference on Salishan Languages. Included in these papers is a discussion of relative clause constructions in Cowichan and another Coast Salish dialect by Hukari (1975). A revised edition of this paper is forthcoming. White and Wilson (1975) presented a paper on Cowichan kinship terminology. A year earlier a description of the Cowichan determiner system was given by Jones (1974).

I.3 Data Sources

The data in this thesis come from my field notes and from materials collected by Dr. T.E. Hukari. Most of my field work was carried out between January, 1974 and

September, 1975 in consultation with two native speakers of Cowichan, Mr. Christopher Paul and Mrs. Ellen White.

Mr. Paul was born at Tsartlip, near Brentwood Bay, in 1893. His first language was Cowichan, which he learned from his mother. At an early age he also learned to speak Saanich, which was his father's native language, and English. His death earlier this year marked the passing of one of the finest native language consultants in the area.

Mrs. White lives in Nanaimo with her husband and family. She was born at Kuper Island. Her native language is Cowichan, but she has learned many Nanaimo forms from her husband, who is a native speaker of that dialect. Mrs. White and a few other Cowichan speakers have been involved for some time in the construction of a set of lessons for teaching Cowichan to non-speakers.

Dr. Hukari's materials have been collected through his private research over the past few years and through his work with projects related to the Native Indian Language Diploma Program offered jointly by the Department of Linguistics and the Faculty of Education at the University of Victoria.

Additional information was obtained from the ladies involved in the Native Indian Language Diploma Program, who very generously volunteered their time and knowledge. To them I owe a special debt of thanks; Ruby Peter, Dolores Louie, Violet Charlie, Theresa Thorne, and Muriel Joe.

CHAPTER II

INTRODUCTION TO THE PHONOLOGICAL STUDY

Cowichan, like all other languages of the Northwest, displays a rich sound system. This system, in conjunction with an elaborate morphology, leads to a proliferation of morphophonemic alternations.

This thesis attempts to characterize the level at which phonology and morphology meet in Cowichan by analysing the various manifestations of one inflectional category of the verb, Actual aspect, and the phonological environments which condition them. The different guises in which this inflectional category appears reflect many of the morphophonemic processes of Cowichan, thus they provide an insightful glimpse into the morphophonemics involved in deriving Cowichan words. This analysis considers the morphophonemic properties of Actual Aspect and the consequent processes of Resonant Glottalization and Resonant Devoicing.

Before considering the morphophonemic properties of Actual aspect a discussion of the distinctive sounds of Cowichan and the more general properties of verbs in the language is presented.

II.1 The Cowichan Sound System

The most complete description of the distinctive sounds of Cowichan is found in Kava's A Phonology of Cowichan. Table I represents the phoneme inventory she proposes

in that thesis.

TABLE I: Kava's Phoneme Inventory

CONSONANTS

Stops:	p	t ^θ	t	c	č	k ^w	q	q ^w
	p̣	ṭ ^θ	ṭ	c̣	č̣	ḳ ^w	q̣	q̣ ^w ?

Fricatives:	θ	s	š	ʃ	x ^w	x	x ^w	h
-------------	---	---	---	---	----------------	---	----------------	---

Resonants:	m	n	
	w		y l

VOWELS	i	ə	u
	e	a	

LENGTH	/i, e, a, u/ have phonemically distinctive long counterparts.
--------	---

The set of contrastive phonological segments proposed for this analysis differs from Kava's phoneme inventory in its number of distinctive elements and in the phonological properties assigned to /h/ and /?/. In addition to the phonemes posited by Kava this analysis recognizes /č̣, k/ and the glottalized resonants, /ṃ, ṇ, ḷ, ỵ, ẉ/ as contrastive segments in Cowichan. It is also claimed that /h/ and /?/ share the feature [+sonorant] with the nasals, glides, and /l/.

Both /č̣/ and /k/ occur in underlying forms in Cowichan.¹ However, /č̣/ is extremely rare and /k/ appears only in borrowed forms. Only one root containing /č̣/ has been observed, but it is free to take normal inflectional morphology.

č̣ók^wχ+t

Fry it (Transitive)

č'ék ^w λ+t	Fry it (Transitive, Actual)
č'ək ^w χ+éls	Fry (Intransitive)

Borrowings involving /k/ have entered Cowichan through English and Chinook Jargon.

ká	From English <u>Car</u>
kápi	From English <u>Coffee</u>
kəpú	From Chinook Jargon <u>kápo</u> (coat)

Therefore, both /č'/ and /k/ are included as segments of Cowichan in this analysis. The case for glottalized resonants, however, is not this straightforward.

It is demonstrated that resonants become glottalized through a morphophonemic process (c.f. III.2). Further, it is claimed that glottalized resonants appear not only as the result of morphophonemic process, but are present in some underlying forms. That is, some underlying forms which have hitherto been analysed with sequences of glottal stop-resonant or resonant-glottal stop as part of their overall shapes are better analysed as having glottalized resonants. One manifestation of plural inflection is a C₁əC₂-reduplicative prefix, /s+mént/ Rock ~ /s+mən-mént/ Rocks, /céləš/ Hand ~ /cəl-cələš/ Hands (c.f. II.2.1). The form which means Grandparent follows this pattern when inflected for plural only if it is analysed as having an underlying glottalized resonant, /í/, as opposed to a sequence of /ʔ1/.²

*síʔlə	Grandparent	*səʔ-síʔlə	Grandparents
--------	-------------	------------	--------------

síŋ Grandparent səŋ-síŋ Grandparents

Cowichan is analysed here as having a series of glottalized resonants, /m̥, n̥, l̥, y̥, w̥/ which arise through morphophonemic process as well as from underlying forms.

The analysis of /h/ and /ʔ/ as [+sonorant] is also based on morphophonemic observations. Kava identifies /h/ and /ʔ/ as members of the fricative and stop classes respectively. However, Chomsky and Halle (1968: 302-3) claim that these segments share the feature [+sonorant] with the nasals, glides, and liquids. Their argument is based on articulatory configurations within the oral cavity. The morphophonemic nature of /h/ and /ʔ/ in Cowichan further substantiates Chomsky and Halle's claim. These segments appear to have more in common with resonants than obstruents. Under certain conditions the resonants, /m, n, l, y, w/ become /h/ (c.f. III.3). Further, //CVC// roots which contain an initial resonant and a /ə/ vowel lose their vowel in the environment of the Actual Aspect reduplicative prefix. The same is true of //CVC// roots with initial /h/ or /ʔ/ (c.f. III.1.2.2). It is claimed that /h/ and /ʔ/ are specified as [+sonorant]. Thus the resonant~h/ alternation is viewed as a devoicing process and //CVC// roots are said to lose their vowels when inflected for Actual Aspect only if the initial consonant is [+sonorant].

The distribution of /h/ is limited. It can occur initially and medially before a primary stressed vowel.

II.2 General Properties of the Verb⁵

Cowichan Actual aspect operates within the verb. Verbs, those words which function predicatively in the language, are based on a root. Roots fall into two classes in Cowichan, those which are inherently verbal and those which are unmarked with respect to the categories noun and verb. Inherently verbal roots function as the predication unless they appear with the {s+} nominalizing prefix,⁶ which allows a nominal as well as a verbal reading.

nét	Get dark
s+nét nominalizer-Get dark	Night

Unmarked roots can stand alone as either a noun or a verb.

mə́nə	Offspring/ Be (someone's) offspring
məstí-məx ^w	Person/ Be a person

Though unmarked roots cannot be classified as either noun or verb, they shall be called nominal when they appear in forms functioning as nouns and verbal in forms which function predicatively. Any verbal root can bear verbal inflection.

//miq̣//	To stick in the ground
s+mí-məq̣	(It's) stuck in the ground
static-resultative-	to stick in the ground
//mə́nə//	Offspring/ Be (someone's) offspring
s+ə-m̃ne?	To (already) have a child
static-resultative-be	(someone's) offspring

híl+əm	To fall
həl-híl+əm	To fall (Plural)
s+ləhé1	Game played with bones

Elsewhere /h/ elides or becomes /ʔ/.

hí-h ₁ í+əm	hí-ʔí+əm ³	To fall
s+hə-íík ^w	s+ə-íík ^w	Broken

If both /h/ and /ʔ/ are analysed as [+sonorant], the alternation between these two segments is viewed simply as a change from [+continuant] to [-continuant].

The set of contrastive features posited for this analysis is given in Table II.

TABLE II. Contrastive Segments in Cowichan

CONSONANTS

Stops:	p	t ^θ	t	c	č	k	k ^w	q	q ^w
	p̣	ṭ ^θ	ṭ	c̣	č̣	ḳ	ḳ ^w	q̣	q̣ ^w
Fricatives:	θ	s	š	ʃ	x ^w	ç	ç ^w		
Sonorants:	m	n	y	l	w			h	
	ṃ	ṇ	ỵ	ḷ	ẉ			?	
VOWELS ⁴		i		u					
		e	ə						
				a					

The feature composition of each segment is specified in the appendix.

A root is said to be a verbal base when it underlies a predicative form. It is the phonological shape of such roots which conditions the shape of the Actual aspect. There are two phonological classes of roots in Cowichan, vowelless roots and roots which contain underlying vowels, the latter class is by far the better represented. All vowelless roots have the shape //CC//. Most roots which contain vowels are //CVC// but a significant minority form a class with the canonical shape //CVCC//. Still others are //CV//, //CVCV//, or longer forms, but these are not numerous in the language.

In Cowichan a verbal base may stand alone to function as a predication. More often a verb consists of a base to which inflectional markers have been attached. A base may be extended by the addition of one or more lexical suffixes (c.f. II.2.2).

xə́ɬ	To ache
xə́ɬ-áʔq ^w ache-top	Head aches (have a headache)

II.2.1 Inflectional Morphology:

The verbal inflectional morphology falls into four classes; transitive suffixes, intransitive suffixes, person markers, and aspectual markers.

There are four transitive suffixes. Three of these are highly productive in the present day language while the fourth would seem to be an older form with a more

restricted distribution. A verbal base with an associated transitivity suffix forms a transitive stem.

{+t}

The {+t} suffix is the most general transitivity suffix. Subjects of forms with {+t} are viewed as being consciously involved in the situation or activity.

k ^w ón+ət	Take/grab it
lém+ət	Look at it
q ^w áq ^w +ət	Club/strike it

{+nəx^w}

The {+nəx^w} suffix has three shapes. With //CC// roots or with roots containing a /ə/ as vowel /+nəx^w/ optionally appears if it is word-final or followed only by the {+əs} 3rd Person marker. Other roots appear with /+nəx^w/ in the same environment. The {+nəx^w} suffix appears as /+n+/ elsewhere. This suffix indicates that the agent is not in full control and it can usually be translated as Unintentionally _____, or Managed to _____.

lók ^w +nəx ^w ~lók ^w +néx ^w	Break it
lóm+nəx ^w	See it
hóq ^w +nəx ^w	Unintentionally smell it

l'c?+nax^w Manage to get it stored
([l'en?x^w])

Passive forms are built on transitive stems. The suffix {+m} Passive attached to stems ending in {+t}, {+nax^w}, or {+stax^w} renders such forms passive.⁷ Passives are translated into English with either a passive reading or the same gloss as their transitive counterparts.

l'em+at+em (He) looks at it/It is looked at

l'om+n+om⁸ (He) sees it/It is seen

l'om+st+om (He) shows it/It is shown

Passive forms take a special set of object markers which incorporate both the object referent and the passive marker. These are discussed below with the other person markers.

Stems which contain no grammatical suffix or which contain an intransitivizing suffix are intransitive.

y'eq^w+t Burn it (transitive)

but

y'eq^w Burn (intransitive)

There are at least four intransitivizing suffixes.

{+m}

The {+m} intransitivizing suffix is morphologically distinct from the {+m} Passive suffix. {+m} is the general intransitivizing suffix.

ʔəŋ ^h +əm	Weave
háq ^w +əm	Smell of something
yáq ^w +əm	Break

{+təl}

The {+təl} suffix is a reciprocal marker and can most easily be translated into English with _____
Each other.

q ^w áq ^w +təl	Club/strike each other
k ^w ín+təl	Fight (with) each other
məlí+təl	Be married to each other

{+θət}

The {+θət} suffix is reflexive and translates as _____
Oneself.

x ^w ís+θət	Shake oneself
ʔáxən [?] +θət	Medicate oneself

{+θət} is also employed as an inchoative marker.

k ^w ás+θət	Get hot (//k ^w es θət//) ⁹
páq ^w +θət	Get mouldy

{+els}

The {+els} suffix is attached to bases which express activity. It provides a means of expressing an action without indicating a specific goal. If a goal is associated with an {+els} stem, it is

it indicates agent, goal, or affected entity.

Transitive:

- nɨʔ cən cətq^w+t I dried it.
- nɨʔ cən qáy+t t^{əə} I killed the deer.
- s+məyəθ

Intransitive:

- nɨʔ cən fəh^h+əm I wove.
- nɨʔ yāq^w+əm t^{əə} The rock broke.
- s+mənt
- nɨʔ cən xət^h+ā^h?q^w I had a headache.

First and Second Person subjects are indicated by a clitic occupying second position in a clause. Third Person subjects of transitive verbs are marked by a word-final suffix, with or without an associated noun phrase. This suffix does not occur with intransitive stems.

	Singular	Plural
First Person	cən	ct
Second Person	č	ceep
Third Person		+əs

- ?ɨ cən lēm+ət I look at it.¹¹
- ?ɨ ct lēm+ət We look at it.
- ?ɨ č lēm+ət You (sg.) look at it.
- ?ɨ cēep lēm+ət You (pl.) look at it.
- ?ɨ lēm+ət+əs He looks at it.
- lēm+ət cən I look at it.
- nɨʔ cən nēm? I went

ni? ném? t^θ
s+wəy?qé? The man went.

The object of a transitive verb expresses patient or goal and is marked by a verbal suffix. The object suffixes distinguish First and Second Persons, singular and plural. If no object suffix appears, the object is understood as Third Person (singular or plural).

	Singular	Plural
First Person	+am?š	+al?x ^w
Second Person	+amə	+alə
<p>{+t}</p>		
lém+ət	Look at <u>it</u> .	
lém+əθ+ <u>am?š</u>	Look at <u>me</u> .	
lém+ət+ <u>al?x^w</u>	Look at <u>us</u> .	
lém+əθ+ <u>amə</u>	Look at <u>you</u> (sg.).	
lém+ət+ <u>alə</u>	Look at <u>you</u> (pl.).	
<p>{+nəx^w}</p>		
lém+nəx ^w	See <u>it</u> .	
ləm+n+ <u>am?š</u>	See <u>me</u> .	
<p>{+stəx^w}</p>		
lém+stəx ^w	Show <u>it</u> .	
ləm+st+ <u>amə</u>	Show <u>you</u> (pl.).	

The {+t} suffix is realized as [θ] before First and Second Person singular object markers in both transitive and

passive verbs, and for some speakers so is the {+š} suffix.

Passive verbs do not normally take subject markers, if an agent is expressed, it appears as an oblique adjunct. However, object markers do appear and they distinguish First and Second Persons singular and First or Second Person plural. As with transitives, no object suffix appears if the object is understood as Third Person. The object markers express both person-number and passive. That is, the {+m} Passive is incorporated into the person marker.

	Singular	Plural
First Person	+eləm	+aləm
Second Person	+am	
 {+t}		
lém+ət+əm	<u>It</u> is looked at/(He) looks at <u>it</u> .	
lém+əθ+ <u>eləm</u>	<u>I</u> am looked at/(He) looks at <u>me</u> .	
lém+əθ+ <u>am</u>	<u>You</u> (sg.) are looked at/(He) looks at <u>you</u> (sg.).	
lém+ət+ <u>aləm</u>	<u>We/you</u> (pl.) are looked at/ (He) looks at <u>us/you</u> (pl.).	
 {+nəx ^w }		
ləm+n+ <u>éləm</u>	<u>I</u> am seen/(He) sees <u>me</u> .	
 {+stəx ^w }		
ləm+st+ <u>am</u>	<u>You</u> (sg.) are shown/(He) shows <u>you</u> (sg.).	

//təh̄// Weave	s+təh̄ Woven
//q̄ ^w ɔl// Barbeque	s+q̄ ^w ɔl Barbequed

But more often the static prefix is concomitant with the Resultative aspect, which is indicated by a reduplicative prefix.

//qay// Die	s+qá-qí? Dead
//pq ^w // Break	s+pə-píq ^w Broken
//míq̄// Stick in ground	s+mí-məq̄ Stuck in ground

{Resultative}

The Resultative aspect is always accompanied by the {s+} Static prefix. The meaning of Resultative-static complexes is the same as that of the simple static prefix. To a large degree {Resultative} is manifest in the same way as Actual aspect (c.f. III.1), it appears as a reduplicative prefix. It differs from the Actual aspect in that it appears with an /-i-/ or /-e-/ infix in place a /ə/ root vowel.

//təh̄// Weave	s+tə-tíh̄ Woven
//ləč̄// Fill	s+ə-líč̄ ¹³ Full

The static and Resultative-static aspectual categories never appear with the {+t, +nəx^w, +š} transitivizing suffixes. Static and Resultative-statics always appear as intransitive or with the

$C_1\text{ə}(C_2)$ - prefix or by an /-l-/ infix.

/-l-/ Infix:

$x^w\text{ə}n\acute{i}t\text{ə}m$ Whiteman $x^w\text{-ə}l\text{-ə}n\acute{i}t\text{ə}m$ Whitemen

Reduplication:

// $q^w\text{ə}l$ // Talk	$q^w\acute{e}l\text{-}q^w\text{ə}l$ Talkative
// $l\acute{e}k^w$ // Break	$l\acute{e}k^w\text{-}l\acute{e}k^w\text{+ə}t$ Smash to pieces
// $\acute{q}\text{ə}l\acute{q}$ // Cross	$\acute{q}\acute{e}l\text{-}\acute{q}\text{ə}l\acute{q}$ Tangle
// yn // Laugh	$y\text{ə}n\text{-}y\acute{e}n\text{+ə}m$ Laugh over and over
// $m\acute{e}q$ // Swallow	$m\acute{e}q\text{-}m\acute{e}q\text{+ə}t$ Swallow lots

{Stative}

Statives are differentiated from their Non-stative counterparts by changes in vowel quality and the insertion of /?/ somewhere within the word. Like static and Resultative-static forms, the {Stative} indicates that a state of affairs has come into being, but unlike those forms, the Stative indicates that the subject is directly involved in the activity, not acted upon. Only a few Stative forms have been observed.

$k^w\acute{e}n\text{+ə}t$ Take	$k^w\text{ə}n\text{?+}\acute{e}t$ Hold
$\acute{x}\text{+}\acute{i}l\text{+}\acute{e}\check{s}$ Stand up	$\acute{x}\text{+}\acute{i}\text{?}l\text{+}\acute{e}\check{s}$ Be standing
$c\acute{o}m\text{+ə}t$ Carry it on back	$c\acute{o}m\text{+}\acute{e}\text{?}t$ Be (in the state of) carrying it on back
$\acute{s}\acute{e}\text{?+}t$ Put on lap	$\acute{s}\acute{e}\text{?}\acute{e}\text{+}t$ Have on lap

{Actual}

The reader is referred to Section III.1 for a discussion of the Actual aspect.

{yə+}

When the {yə+} prefix occurs it is concomitant with the {Actual}. The {yə+} prefix indicates that an act is being performed while in motion or in a series.

ʔé-ʔm̄+ət Be (in the middle of) sitting down.

but

yə+ʔé-ʔm̄+ət Be sitting down while in motion (as in a car)/Be sitting down one right after the other

Aspectual categories often co-occur.

Plural-Actual

hə́l-hí-ʔl̄+əm̄ Falling (plural)
1 2 3 4

1-Plural 2-Actual 3-Fall, //hi1// 4- {+m}

Plural- {s+} static

s+míq̄-məq̄ Stuck in ground (plural)
1 2 3

1- {s+} static 2-Plural 3-Stick in ground,
//miq̄//

Plural-Diminutive

c-ə1-í-cəm̄ìl̄ Small and thin/Very thin
1 2 1 3 (plural)

1-Diminutive 2-Plural 3-Thin (cōmīl)

{x^wə+}-Resultative-static

x^wə+s+yé-ýòđ Fallen over
1 2 3 4

1-{x^wə+} 2-{s+} static 3-Resultative
4-Fall over, //yeđ//

II.2.2 Lexical Suffixes.

Lexical suffixes provide a means of extending the semantic content of the base. Lexical suffixes, unlike grammatical suffixes, denote concrete entities. There are two types of lexical suffixes, somatic, those which pertain to body parts, and non-somatic, a less homogeneous set which denotes concrete objects other than body parts or other notions to which a clear meaning can be ascribed. The meaning of the lexical suffix(es) is incorporated into the meaning of the base.

Somatic:

//ʒam// Try on	//-šen// Foot/leg
ʒám-šən əm	Try on shoes
//θ ₁ // Big	//-qson// Nose
θ ₁ -qson	Big nosed
//k ^w es// Burn	//-(ə)lexən?// Arm
k ^w és-əlexən?	Burnt arm

Non-somatic:

//q ^w əyíłəš// ¹⁴	Dance	//-əʔp//	Tree/bush
q ^w əyíłəš-əʔp			Pine (lit -dancing tree)
//ʔič//	Cut/slice	//-mən//	Leftovers
ʔič-mən			Sawdust

Lexical suffixes are incorporated into the base, therefore, they precede any grammatical suffixes which appear in the word.

ʔám-aʔq ^w +əm	Try a hat on
ʔəč-én+t	Slice a piece off the end (//-en// End)

II.2.3 Stress and Vowel Reduction:

Very often the underlying shapes of roots and affixes are altered in surface forms. In most cases it is the properties of the vowels which change. Such changes are conditioned by the presence of certain aspectual categories, lexical suffixes, or grammatical suffixes within the word. Changes in vowel quality in a word can affect the stress pattern of that word.

II.2.3.1 Stress:

Three levels of stress are distinguished in Cowichan, primary (´) and secondary (`) stressed vowels are opposed to unstressed ones. For the vast majority of words in Cowichan stress can be predicted, and it seems to be a very

superficial phenomenon.

A vowel bears primary stress if it is the first [+tense] vowel, (c.f. Table IV), in a word or, if there are no [+tense] vowels, the first /ə/. Secondary stressed vowels appear in longer words, but research into this area has not been sufficient to state the environments in which they occur.

Primary Stress:

lém+ət	Look at it
lóm+nəx ^w	See it
s+wəỵqé?	Man
s+ɬéni?	Woman

Words which contain no [+tense] vowels and which bear a /ə/ as their first vowel do not follow this pattern if this /ə/ is followed by an obstruent-/ə/ sequence. In such words primary stress falls on the second /ə/.

xə-xéɬ	Aching (Actual)
wəɬéc	Stumble

Stress will not be marked in any of the examples which follow in Chapter III, as they conform to the conditions for stress outlined above.

II.2.3.2 Vowel Reduction:

Under a variety of conditions Cowichan vowels reduce, [+tense] vowels lax to /ə/ or vowels elide. Such changes

are the result of Vowel Reduction. Vowel Reduction is a widespread morphophonemic process in Cowichan, it affects both roots and affixes and is conditioned by aspect, lexical suffixes and grammatical suffixes.

The reduction of root vowels conditioned by the presence of an Actual aspect prefix is discussed and formalized in Section III.1.2.2. Other aspectual categories which are manifest as reduplicative prefixes condition similar reductions. Actual aspect does not affect root vowels alone. Forms containing the {+els} intransitivizing suffix generally appear with [els] in Non-actual forms and [əɪs] in the Actual (the glottalization of /i/ is a function of Resonant Glottalization, c f. III.2).

cəm+éls	Pack on back
cə-cəm+əɪs	Packing on back (Actual)

The presence of {+els} in Non-actual forms conditions reduction of the root vowel if it is [+tense].

pét ^θ +ət	Sew it
but	
p ^θ t+éls	Sew
pé-pət ^θ +əɪs	Sewing (Actual)

Other grammatical suffixes condition reduction of root vowels. Both {+nəx^w} and {+stəx^w} cause [+tense] vowels to reduce to schwa.

lém+ət	Look at it
but	
lém+nəx ^w	See it
lém+stəx ^w	Show it

These suffixes do not affect roots with underlying /ə/.

//k ^w ən//	
k ^w ón+ət	Take it
k ^w én+nəx ^w	Find it

It should be noted that while {+els} has the potential to alter the stress contour in its various manifestations, {+nəx^w} and {+stəx^w} do not, as they do not contain [+tense] vowels.¹⁵

Certain combinations of roots and lexical suffixes also cause root and suffix vowels to reduce.

//ʎam// Try on	//-šən// Foot/leg
ʎám-šən+əm	Try on shoes
//ʎam// Try on	//-aʔq ^w // Top
ʎám-aʔq ^w +əm	Try on a hat
//θi// Big	//-šən// Foot/leg
θí-šən	Large footed
//ǰ ^w aq ^w // Club/strike	//-əpsəm// Back of neck
ǰ ^w áq ^w -əpsəm+t	Club on back of neck
//ǰ ^w aq ^w // Club/strike	//-(ə)wíc// Back
ǰ ^w q ^w -əwíc+t	Club on back

Kinkade (1973) offers an excellent discussion of this phenomenon for Columbian Salish. However, the situation in Cowichan is somewhat different from that in Columbian. Kinkade states that in Columbian roots and lexical suffixes are strong, weak, or variable with regard to stress, and that certain combinations of roots and lexical suffixes condition certain stress contours for words (e.g. strong suffixes always take primary stress, strong roots take primary stress when followed by weak or variable suffixes, etc.). Further, he states that variable roots and suffixes have stressed and unstressed variants, the unstressed variants can contain either unstressed full vowels ([+tense]) or schwas. Thus, the Columbian variable root //q̣il// Sick appears as /q̣í1/ before a weak lexical suffix and as /q̣il/ before a strong lexical suffix (and as /q̣ə1/ in some other cases). Roots in Cowichan do not behave in this manner.

The examples above, (p.29), demonstrate that the root //q̣^waq^w// Club/strike has at least two variants, one appearing with a root vowel and one appearing without a vowel. It seems to be the case that the root vowel is retained only if it bears primary stress. That is, //q̣^waq^w// does not appear as /q̣^waq^w/ unless it carries primary stress and if stress does not appear on the root, the vowel is reduced.

*q̣^waq^w-əwíc+t Club on back

In Cowichan roots appear either with their underlying vowel bearing primary stress or with a non-primary stressed

reduced vowel. Though such reductions of root and lexical suffix vowels in Cowichan could be discussed in terms of strong, weak, and variable stressed roots, by treating them as instances of Vowel Reduction which condition stress placement they can be viewed as part of a more general process operant in Cowichan.

Some forms, like {+nəx^w} and {+stəx^w}, cause root vowels to reduce without affecting the stress contour of the word, while others, like {+els} and lexical suffixes, cause vowel reduction and stress readjustment. It is perhaps better to think of stress as a consequence of Vowel Reduction, which is conditioned by aspect and grammatical and lexical suffixes.

It has been demonstrated that some grammatical and lexical suffixes condition changes in root vowel's properties. For this reason, the present study is confined to forms with the {+t} or {+š} transitive suffixes or the {+m} intransitive suffix. These three suffixes do not condition Vowel Reduction.

II.3 Chapter II Summary

In this chapter Cowichan has been characterized as having a large consonant inventory, including /č̣, k, ṁ, ṅ, ĩ, ĵ, ǵ/ which were not proposed in A Phonology of Cowichan, and a small but unstable set of vowels. In addition, it has been shown that verbs convey a great deal of information

through their inflectional morphology, four transitive categories exist, {+t, +nəx^w, +stəx^w, +š}, as well as a passive, {+m}. Five intransitive oppositions are maintained, forms with {+m, +θət, +təl, +els} are contrastive with each other as well as with forms bearing no grammatical suffix. Transitivity, passive, and intransitivity suffixes can co-occur in unique ways. Subjects and objects are expressed by verbal inflection. At least seven aspectual distinctions are maintained by the {x^wə+, s+-static, Resultative, Plural, Stative, Actual, yə+} categories. It was also noted that roots have various underlying shapes, including vowelless roots, //CC//, and roots containing underlying vowels, which have a //CVC//, //CVCC//, or some smaller or larger string of segments as their underlying shapes, and that roots can be expanded by the addition of lexical suffixes.

By analysing the Actual aspect in some detail Chapter III demonstrates the roles which canonical shape, inflectional content, and phonological content play in the formation of surface words from underlying roots.

CHAPTER III
THE PHONOLOGICAL STUDY

In a structuralist description of Actual aspect this inflectional category would be viewed as a morpheme, and a discussion of it would simply consider its allomorphs and the relevant conditioning factors. On the other hand, in a generative transformational analysis Actual aspect can be viewed as a semantic feature attributed to lexical items. A lexical item in Cowichan might be specified as follows.

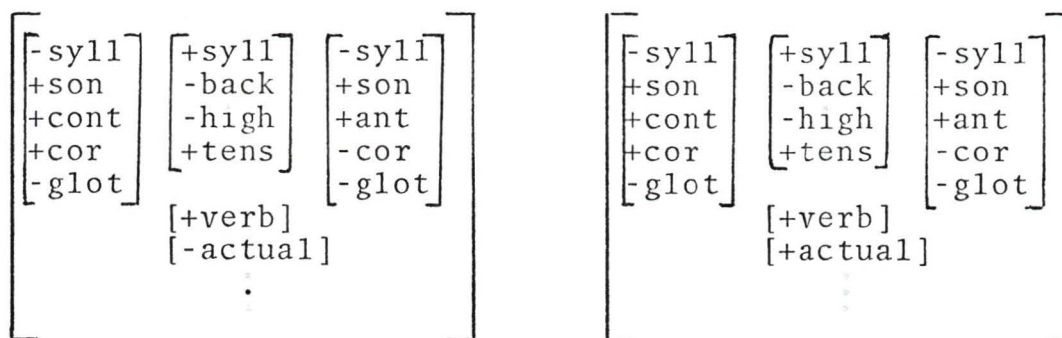
$$\left[\begin{array}{c} \vdots \\ [+verb] \\ [-actual] \\ \vdots \end{array} \right] \qquad \left[\begin{array}{c} \vdots \\ [+verb] \\ [+actual] \\ \vdots \end{array} \right]$$

Only verbs are inflected for Actual aspect, so forms which do not function as verbs, (either [-verb] or neutral with respect to [\pm verb]), do not carry a specification for [Actual].¹

Chomsky (1967: 164) attributes the following properties to lexical items.

"... each consists of a distinctive feature matrix ... and a complex symbol ..., the latter being a set of features of various sorts (syntactic and semantic features, features that specify which morphological or transformational processes apply ..., features that exempt items from certain phonological rules, and so on)"

A lexical item by Chomsky's definition does not contain phonological segments, but a string of distinctive feature specifications representing these segments. With this in mind, at least part of an entry for the root //lɛm// Visual-ly Perceive looks like one of the following.²



Entries such as these provide input to morphophonemic and phonological rules which ultimately render the forms /lɛm/ and /lɛ-lɛm/ respectively.³

By employing a model which treats Actual aspect as an inherent property of verbs this analysis accounts for the processes of Resonant Glottalization and Resonant Devoicing in a straightforward manner as consequences of properties of the verbal base.

III.1 Actual Aspect

The term Actual aspect is taken from Thompson and Thompson (1971: 273). In that work Actual aspect is defined as referring to:

"...a situation or activity viewed as in progress at a particular time or as incomplete; the simplest translation device is to use the English -ing form wherever possible"

Non-actual

yón+əm Laugh

lém+ət Look at it

Actual

yéñ+əṃ Laughing

lé-íəṃ+ət Looking at it

In addition to notions of progressive activity, those translatable with English *-ing*, a few examples involving slightly different semantic connotations have been observed in Cowichan. Verbs are marked as [+actual] when an activity is expressed as taking place serially or while the agent is in motion, and in these cases the Actual co-occurs with the {yə+} aspectual prefix.

yə-?ó-?ṃ+ət Sitting up one after the other/
while moving

yə-x^wə-x^wóỵ Waking up one after the other

Verbs marked [+actual] are also employed to indicate an activity which takes place, or has taken place, habitually.

há-ṃ^ləc (He's) always stumbling

há-?k^w+əṣ̌ Used to use

Forms inflected for Actual aspect are semantically opposed to all other forms of the verb, which are said to be Non-actual ([-actual]).

"This opposition is reminiscent of the perfective-imperfective distinction in Slavic, but there the perfective appears as a marked category, while in Clallam [and in Cowichan] it is rather the aspect which corresponds semantically to the imperfective-the actual-that is marked."4

The opposition between [+actual] forms and their [-actual] counterparts is maintained through reduplicative prefixation, alternations in vowel qualities, or alternations in vowel positions.

It was observed that roots form two phonological classes in Cowichan, one class contains underlying vowels while the other does not (c.f. II.2). Some roots containing underlying vowels appear with a reduplicative prefix in their [+actual] forms. In the [-actual] the C₁-V-C₂ of these roots appear at the surface level unless vowel reduction has been conditioned by a suffix or by some other reduplicative prefix.

<u>Root</u>	<u>[-actual]</u>	<u>[+actual]</u>	<u>Gloss</u>
//lem//	lémtət	lé-łəm+ət	Look at it

The [+actual] forms of other roots containing underlying vowels do not take a reduplication. In these forms root vowels appear as [-tense], /ə/, in the Non-actual and as [+tense] /a/ or /e/ in the Actual. Such roots are not assigned specific vowels in their underlying forms, the qualities of their vowels are specified by morphophonemic rules (c.f. III.1.2.1).

<u>Root</u>	<u>[-actual]</u>	<u>[+actual]</u>	<u>Gloss</u>
//čVtq ^w //	čótq ^w +t	čátq ^w +t	Grind it

Vowelless roots appear with a reduplicative prefix marking the Actual only if they bear no grammatical suffixes.

Otherwise, vowelless roots appear at the surface level with an inserted vowel. Most of these inserted vowels resemble the //V// of forms like //čVtq^w// in that they appear as /ə/ in [-actual] forms and as /a/ or /e/ in [+actual] forms. A smaller set of vowelless roots appear with /a/ or /e/ in both Actual and Non-actual forms. Such forms mark the aspectual distinction by the position of the morphophonemically inserted vowel.

Actual aspect is discussed in terms of root classes which are, in turn, discussed in terms of the phonological composition of the members of each class.

III.1.1 Vowelless Roots:

Vowelless roots have the underlying shape //CC//. Most //CC// roots observed contain obstruents as both C₁ and C₂, but voiced sonorants can occur in either C₁ or C₂ position. These roots do not occur on the surface without vowels.⁵ Vowels are morphophonemically inserted and their properties are conditioned by the nature of the [actual] feature and the consonant segments of the root. The following four data sets account for the behavior of //CC// roots.

Data Set A

Uninflected //CC// roots invariably appear at the surface with an inserted /ə/ interconsonantly when [-actual].

<u>Root</u>	<u>Uninflected Form</u>	<u>Gloss</u>
//ts//	tós	Arrive
//p̥kʷ//	p̥ókʷ	Float
//kʷɬ//	kʷóɬ	Spill/tip over
//t̥qʷ//	t̥óqʷ	Sever (of rope etc.)

However, when //CC// roots are marked [+actual] and they appear in forms which contain no suffixes, they bear a reduplicative prefix.

<u>Root</u>	<u>[+actual]</u>	<u>Gloss</u>
//ts//	tə-tós	Getting there
//t̥qʷ//	t̥ə-t̥óqʷ	Severing

Forms which appear with a suffix do not follow this pattern. With a following grammatical suffix most [-actual] forms appear with a vowel following C₂, this vowel is usually, but not always, /ə/. In the same environment their [+actual] counterparts appear with a [+tense] /a/ or /e/.

Data Set B

Some vowelless roots containing obstruents as both underlying segments appear at surface level with /ə/ following C₂ and preceding the suffix when they are specified [-actual]. When [+actual] these forms appear with /a/ or /e/ following C₁. The nature of the vowel appearing in [+actual] forms is conditioned by the second consonant of the root. The vowel appears as /a/ if C₂ is a labialized

back stop, /k^w, ḳ^w, q^w, q̣^w/, or a labialized uvular fricative, /x^w/. Otherwise the inserted vowel is /e/.

<u>Root</u>	<u>[-actual]</u>	<u>[+actual]</u>	<u>Gloss</u>
//ṭ ^o q̣//	ṭ ^o q̣ó+m	ṭ ^o éq̣+oṁ	Drip
//θx//	θxó+t	θéx+t	Push it
//q̣p//	q̣pó+t	q̣ép+t	Gather it
//č̣ḷ//	č̣ḷó+m	č̣éḷ+oṁ	Jump
//ʔq ^w //	ʔq ^w ó+t	ʔáq ^w +t	Wet it
//ḷq̣ ^w //	ḷq̣ ^w ó+t	ḷáq̣ ^w +t	Wrap it

Data Set C

Other vowelless roots appear with [+tense] /a/ or /e/ in both Actual and Non-actual forms when followed by a grammatical suffix. The vowels appear in the same position in these forms as in those exemplified by Data Set B, and the quality of the vowel is conditioned by the same factors as those mentioned above.

<u>Root</u>	<u>[-actual]</u>	<u>[+actual]</u>	<u>Gloss</u>
//ḳ ^w ʔ//	ḳ ^w ʔé+t	ḳ ^w éʔ+t	Pour it out
//ṣq̣//	ṣq̣é+t	ṣéq̣+t	Tear it
//ṭk ^w //	ṭk ^w á+t	ṭák ^w +t	Caulk it
//ṭ ^o x ^w //	ṭ ^o x ^w á+t	ṭ ^o áx ^w +t	Wash it
//ṭq̣ ^w //	ṭq̣ ^w á+t	ṭáq̣ ^w +t	Sever it

Data Set D

Very poorly represented in the data are //CC// roots which contain at least one non-obstruent consonant. Only

two examples have been observed.

<u>Root</u>	<u>[-actual]</u>	<u>[+actual]</u>	<u>Gloss</u>
//yn//	yón+əm	yéñ+əṃ	Laugh
//ty//	táy+ə ⁶ l	téy+əḷ	Go upstream

Rules can be formulated to account for the data presented above. The following four rules are partially ordered, Rules 1 and 2 operate on lexical entries, roots with full phonological and lexical feature specifications, the other two operate on the output of Rule 2.

Rule 1 Vowel Insertion I: No Suffixes

In the context of Data Set A it was stated that //CC// roots appearing without an associated grammatical suffix contain a medial /ə/ in the [-actual] and appear with a reduplicative prefix in the [+actual]. It is claimed that //CC// roots are always reanalysed as /CəC/ just in case they do not co-occur with a grammatical suffix. In such cases //CC// roots behave like //CVC// roots which have a /ə/ vowel, they appear as /C₁əC₂/ in the [-actual] and as /C₁ə-C₁əC₂/ when [+actual]. Rule 1 inserts a /ə/ interconsonantly in //CC// roots which do not appear with a grammatical suffix, thus providing an acceptable structural description for the operation of the C₁V- Reduplication Rule (c.f. III.1.2.2).

Rule 1: Vowel Insertion Rule I:

[CC]# → [CəC]# ⁷

Rule 1 alters //CC// roots in the following way, regardless of the specification of the feature [actual].

<u>Root</u>		<u>Output of Rule 1</u>
[ts]#	→	[təs]#
[p ^h k ^w]#	→	[p ^h ək ^w]#
[k ^w ɬ]#	→	[k ^w əɬ]#

Subsequent to the operation of Rule 1 these forms and all others like them undergo rules which assign stress and spell out the phonetic realization of each form and, if a form is specified as [+actual], the C₁V-Reduplication Rule and the rules which it triggers.

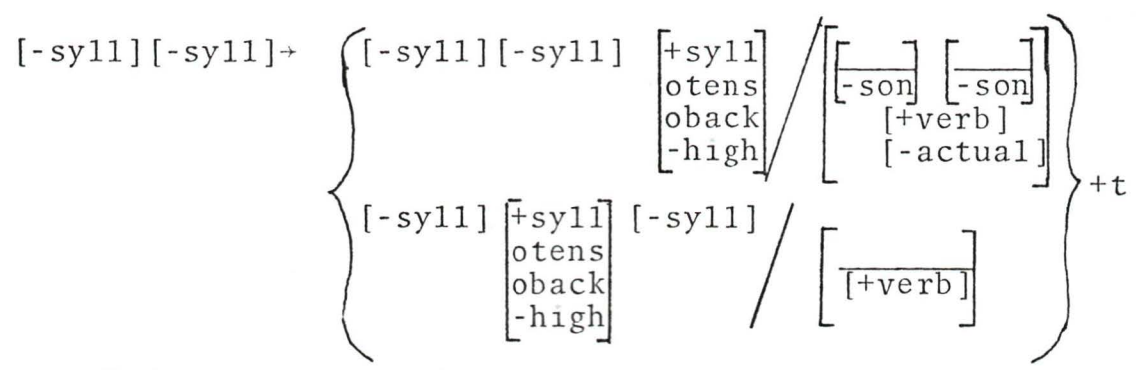
Rule 2 Vowel Insertion II: With Suffixes

The position which an inserted vowel assumes in a root which precedes a grammatical suffix depends upon the phonological properties of the root's consonants and the value of the feature [actual]. It was stated earlier that //CC// roots which contain only obstruents, which are [-actual], and which are followed by a grammatical suffix appear with an inserted vowel in post-C₂ position (c. f. Data Sets B and C). On the basis of all data presented in this section it is also noted that inserted vowels appear medially in all other cases where a grammatical suffix is present: when a //CC// root contains at least one non-obstruent or when the form is marked [+actual]. Vowel Insertion II places a vowel in either post-C₂ position or medial position according to the conditions discussed above.

This rule correctly implies, by employing conjunctive bracket notation, that the basic position which an inserted vowel assumes is medial and that a post-C₂ vowel position is more marked. Uninflected roots, the most basic forms which can occur as verbs, contain medial vowels, so do all //CC// forms which involve at least one non-obstruent consonant and all [+actual] forms.

The vowels inserted by Rule 2 are not specified as + or - for the features [tense] and [back] by this rule, [0___] indicates that the feature is neither + nor -. The values for [tense] and [back] are specified by Rules 3 and 4 respectively.⁸

Rule 2: Vowel Insertion Rule II:



Note: +t is used here as an abbreviation for the suffixes {+t, +š, +m}, which are the suffixes employed in this analysis.

If C_{ob} represents any obstruent, C any consonant, and V a vowel which is not fully specified, Rule 2 can be viewed as an abbreviation of the following two disjunctively ordered rules.

$$a \quad //C_{ob1}C_{ob2}// \rightarrow C_{ob1}C_{ob2}V / _ +t \\ [-\text{actual}]$$

b //CC// → CVC /___+t

By Rule 1 //t⁰q// → /t⁰qə/ when [-actual] and followed by a grammatical suffix and it becomes /t⁰Vq/ when [+actual] and followed by a suffix. The root //yn// becomes /yVn/ in both cases.

Rule 3 Tense Specification

In a well formed feature matrix each feature must have a value, either + or -. Tense Specification assigns a value to the feature [tense] of vowels inserted by Rule 2. The value of the [tense] feature is conditioned by the value of [actual] and by the value assigned to the lexical feature [strong].

Most [-actual] //CC// roots with a following grammatical suffix appear with an inserted /ə/ at the surface level, as in Data Sets B and D. However, some //CC// roots, as those presented in Data Set C, appear with [+tense] /a/ or /e/ in the [-actual]. If both consonants are obstruents, the shape of the inserted vowel cannot be predicted for [-actual] forms containing a grammatical suffix, no phonological or semantic criteria can be invoked which provide a satisfactory conditioning environment. Therefore, it is necessary to provide some formal means to account for this unpredictability. It is proposed that those //CC// roots which appear with /a/ or /e/ in the environment in question are marked [+strong] in their lexical entries and that all other roots are [-strong]. The presence of the feature

[strong] thus provides a means for marking a morphological opposition between these roots and all others in the lexicon.

The Tense Specification Rule marks the inserted vowels of [+actual] and [+strong, -actual] forms as [+tense] and the vowels of [-strong, -actual] forms as [-tense].

Rule 3: Tense Specification Rule:

$$[\text{otense}] \rightarrow \left\{ \left\langle \begin{array}{l} [+tense] \\ [\alpha \text{tense}] \end{array} \right\rangle \right\} / [-\text{syll}] \frac{\quad}{[\text{+syll}]} / [-\text{syll}] / \left[\begin{array}{l} \left\langle \begin{array}{l} [+strong] \\ [\alpha \text{actual}] \end{array} \right\rangle \end{array} \right]$$

+t⁹

Thus, when [-actual], [otense] → [+tense] if [+strong] and [-tense] if [-strong] and when [+actual], [otense] → [+tense].

Rule 4 Back Specification

The output of Rule 3 provides input to the Back Specification Rule. It was noted that the inserted vowel of [+actual] and [+strong] forms is /a/ if C₂ is a labialized back stop or a labialized uvular fricative, and /e/ in all other forms bearing these specifications. The vowels of these forms have been specified as [+tense] by Rule 3. The Back Specification Rule marks [+tense] vowels as [+back], /a/or [-bæk] /e/ in the appropriate environments. It also redundantly marks all [-tense] vowels as [-back] (/ə/, the only [-tense] vowel, is [-back]).

Rule 4: Back Specification Rule:

$$[\text{oback}] \rightarrow \left\{ \begin{array}{l} [+back] / \left\{ \begin{array}{l} k^w \\ k^w \\ q^w \\ q^w \\ x^w \end{array} \right\} / [-syll] \\ \hline [-back] \end{array} \right\} \begin{array}{l} +syll \\ +tens \end{array}$$

After the application of the Back Specification Rule the vowels inserted in //CC// roots by Rule 2 are fully specified.

The following examples illustrate how Rules 1-4 alter their respective inputs. The output of Rule 4 feeds into the Resonant Glottalization Rule, the output of Rule 1 feeds into the C₁V- Reduplication Rule, and all outputs are, in turn, subject to stress and epenthesis rules, whose outputs provide the surface forms of the various roots. The lexical entry of //k^wɬ// is marked [+strong] while those of //p^wk^w// and //yn// are [-strong]. The change effected by each rule is underlined.

	[-actual] No Suffix	[-actual] Suffix	[+actual] Suffix
Rule 1	k ^w <u>ɬ</u>	_____	_____
Rule 2	_____	k ^w ɬ $\begin{bmatrix} +syll \\ +tens \\ oback \\ -high \end{bmatrix} +t$	k ^w $\begin{bmatrix} +syll \\ +tens \\ oback \\ -high \end{bmatrix} \text{ɬ}+t$
Rule 3	_____	k ^w ɬ $\begin{bmatrix} +syll \\ +tens \\ oback \\ -high \end{bmatrix} +t$	k ^w $\begin{bmatrix} +syll \\ +tens \\ oback \\ -high \end{bmatrix} \text{ɬ}+t$
Rule 4	_____	k ^w ɬ $\begin{bmatrix} +syll \\ +tens \\ -back \\ -high \end{bmatrix} +t$	k ^w $\begin{bmatrix} +syll \\ +tens \\ -back \\ -high \end{bmatrix} \text{ɬ}+t$

	$k^w \text{ə}t$	$k^w t e+t$	$k^w e t+t$
	[-actual] No Suffix	[-actual] Suffix	[+actual] Suffix
Rule 1	$\underline{p} \text{ə} k^w$	_____	_____
Rule 2	_____	$\underline{p} k^w \begin{bmatrix} +\text{syll} \\ \text{otens} \\ \text{oback} \\ -\text{high} \end{bmatrix} +t$	$\underline{p} \begin{bmatrix} +\text{syll} \\ \text{otens} \\ \text{oback} \\ -\text{high} \end{bmatrix} k^w +t$
Rule 3	_____	$\underline{p} k^w \begin{bmatrix} +\text{syll} \\ -\text{tens} \\ \text{oback} \\ -\text{high} \end{bmatrix} +t$	$\underline{p} \begin{bmatrix} +\text{syll} \\ +\text{tens} \\ \text{oback} \\ -\text{high} \end{bmatrix} k^w +t$
Rule 4	_____	$\underline{p} k^w \begin{bmatrix} +\text{syll} \\ -\text{tens} \\ -\text{back} \\ -\text{high} \end{bmatrix} +t$	$\underline{p} \begin{bmatrix} +\text{syll} \\ +\text{tens} \\ +\text{back} \\ -\text{high} \end{bmatrix} k^w +t$
	$\underline{p} \text{ə} k^w$	$\underline{p} k^w \text{ə} +t$	$\underline{p} a k^w +t$

	[-actual] No Suffix	[-actual] Suffix	[+actual] Suffix
Rule 1	_____	_____	_____
Rule 2	_____	$y \begin{bmatrix} +\text{syll} \\ \text{otens} \\ \text{oback} \\ -\text{high} \end{bmatrix} n+m$	$y \begin{bmatrix} +\text{syll} \\ \text{otens} \\ \text{oback} \\ -\text{high} \end{bmatrix} n+m$
Rule 3	_____	$y \begin{bmatrix} +\text{syll} \\ -\text{tens} \\ \text{oback} \\ -\text{high} \end{bmatrix} n+m$	$y \begin{bmatrix} +\text{syll} \\ +\text{tens} \\ \text{oback} \\ -\text{high} \end{bmatrix} n+m$
Rule 4	_____	$y \begin{bmatrix} +\text{syll} \\ -\text{tens} \\ -\text{back} \\ -\text{high} \end{bmatrix} n+m$	$y \begin{bmatrix} +\text{syll} \\ +\text{tens} \\ -\text{back} \\ -\text{high} \end{bmatrix} n+m$
		$y \text{ə} n+m$	$y e n+m$

Neither //yn// nor //ty// have been observed as uninflected roots, all occurrences of these roots have been cited with a suffix.

After the Resonant Glottalization Rule, (c f. III.2), stress, and epenthesis rules have applied to the output of Rule 4 the shapes for //yn// will be /yón+əm/ for the [-actual] and /yéñ+əḿ/ for the [+actual].

III.1.2.1 //CVCC// Roots.¹⁰

The underlying vowel of //CVCC// roots is unspecified for the features [tense] and [back]. The factors which govern the values of these features are very similar to those which operate on the inserted vowels of //CC// roots with following grammatical suffixes, [tense] is conditioned by the value of [actual] in the lexical entry and [back] is conditioned by the value of [tense] and by the phonological properties of C₃. Data Set D shows some //CVCC// roots.

Data Set D

<u>Root</u>	<u>[-actual]</u>	<u>[+actual]</u>	<u>Gloss</u>
//čVýx ^w //	čóýx ^w +t	čéýx ^w +t	Dry it
//ǰVpḫ//	ǰópḫ+t	ǰépḫ+t	Sprinkle (of sand etc)
//sVwǫ//	séwǫ+t	séwǫ+t	Look for it
//čVtǫ ^w //	čótǫ ^w +t	čátǫ ^w +t	Grind/break it
//θVyq ^w //	θáyq ^w +t	θáýq ^w +t	Dig it (of a hole etc.)

It seems evident from these examples that the same processes which specify the inserted vowels of //CC// roots also specify the vowels of //CVCC// roots. Rules 5 and 6

predict all values for [otense] and [oback] if the environment statements are formulated to account for the following facts; in addition to two consonant //CC// roots, three consonant roots also constitute an environment and the root-final consonant, not C_2 , conditions the value of [back]. Note that neither of these rules rely crucially on the fact that the vowel has appeared through insertion by Rule 2, the structural descriptions of these rules rely only on the presence of a [o___] feature specification for the features [tense] and [back].

Rule 5 Tense Specification

Rule 5 is a reformulation of Rule 3. Rule 5 differs from its predecessor in that the environment statement allows for a //CVCC// root configuration in addition to a /CVC/ output from Rule 2. No //CVCC// roots are marked [+strong] in the lexicon, therefore, all Non-actual forms will contain a /ə/ vowel.

Rule 5: Tense Specification Rule:

$$[\text{otense}] \rightarrow \left\{ \begin{array}{l} \langle [+tense] \rangle \\ [\alpha tense] \end{array} \right\} / [-\text{syll}] \frac{\quad}{[+\text{syll}]} / (([-\text{syll}])[-\text{syll}]) /$$

$$\left[\begin{array}{l} \langle [+strong] \rangle \\ [\alpha actual] \end{array} \right] +t$$

In addition to those changes noted for Rule 3, Rule 5 changes [otense] to [-tense] in the vowels of //CVCC// roots marked [-actual] and to [+tense] in the [+actual] ones.

Rule 6 Back Specification

Rule 6 differs from Rule 4 by allowing an additional consonant to appear between the vowel and the root-final consonant. This rule implies that the nature of the root-final consonant determines the value which [oback] assumes for both //CC// and //CVCC// roots.

$$\text{Rule 6: Back Specification Rule:}^{11}$$

$$[\text{oback}] \rightarrow \left\{ \begin{array}{l} [+back] / ([-syll]) \left\{ \begin{array}{l} k^w \\ k^w \\ q^w \\ q^w \\ x^w \end{array} \right. / [-syll] \left[\begin{array}{l} +syll \\ +tens \end{array} \right] \\ [-back] \end{array} \right\}$$

In addition to completing the vowel specifications of inserted vowels Rule 6 completes the specifications of the underlying unspecified vowels in //CVCC// roots. The following example illustrates the combined effects of Rules 5 and 6 on //CVCC// roots. Such roots do not fit the structural description of Rule 2, therefore, that rule does not operate on them.

	[-actual] Suffix	[+actual] Suffix
Rule 5	$\dot{c} \left[\begin{array}{l} +syll \\ -tens \\ \text{oback} \\ -high \end{array} \right] t\dot{q}^w+t$	$\dot{c} \left[\begin{array}{l} +syll \\ +tens \\ \text{oback} \\ -high \end{array} \right] t\dot{q}^w+t$
Rule 6	$\dot{c} \left[\begin{array}{l} +syll \\ -tens \\ -back \\ -high \end{array} \right] t\dot{q}^w+t$	$\dot{c} \left[\begin{array}{l} +syll \\ +tens \\ +back \\ -high \end{array} \right] t\dot{q}^w+t$

Stress rules apply to these two forms rendering /č'átq^w+t/ for the [-actual] and /č'átq^w+t/ for the [+actual].

III.1.2.2 //CVC// Roots:

This section discusses underlying //CVC// roots, whose lexical entries are fully specified, both consonants and the vowel are uniquely defined, and /CVC/ forms which have arisen as a consequence of Rule 1 (c.f. p.40). The reduplicative prefix which accompanies [+actual] forms is conditioned by the phonological properties of all three segments in the root. As mentioned earlier, simple [-actual] forms appear at the surface level with the same phonological segments as the root in the case of //CVC// roots and with an inserted /ə/ in uninflected //CC// forms.¹²

The phonological properties of the final consonant in all /CVC/ forms discussed here determine whether the reduplicative prefix will be a C₁V- or a C₁ə- configuration. Those forms which contain a final voiceless sonorant, /h/ or /ʔ/, require the C₁ə- reduplicative prefix, while all others take the C₁V- prefix.

Data Set F

Roots containing an initial obstruent, a [+tense] vowel, and a final voiceless sonorant are marked by a C₁ə- prefix in [+actual] forms.

<u>Root</u>	<u>[-actual]</u>	<u>[+actual]</u>	<u>Gloss</u>
//seʔ//	séʔ+t	sə-séʔ+t	Lift it

//k ^w i [?] //	k ^w i [?]	k ^w ə-k ^w i [?]	To rise (of water)
//če [?] //	čé [?] +t	čə-čé [?] +t	Place it on something
//te [?] //	té [?] +t	tə-té [?] +t	Try it
//t ^θ e [?] //	t ^θ é [?] +t	t ^θ ə-t ^θ é [?] +t	Chew it

Data Set G

An /hə-/ prefix is manifest in [+actual] forms of roots containing an initial voiced sonorant, a [+tense] vowel, and a final voiceless sonorant. Only a few examples of this pattern have been recorded to date.

<u>Root</u>	<u>[-actual]</u>	<u>[+actual]</u>	<u>Gloss</u>
//le [?] //	lé [?] +š	hə-l [?] +əš	Store it
//me [?] //	mé [?] +š	hə-m [?] +əš	Take it off (of apparel)
//ne [?] //	ne [?] +m ¹³	hə-n +əṁ	Go

Putting aside voiced sonorant~ /h/ correspondences momentarily, (c f. III.3), Data Sets F and G can be viewed as reflecting the same reduplication pattern.

Rule 7 C₁ə- Reduplication

The reduplicative pattern which emerges for //CVC// roots with any initial consonant, a [+tense] vowel, and a final voiceless sonorant, /h/ or /ʔ/, marked [+actual] is C₁ə-.

Rule 7: C₁ə- Reduplication Rule:

$$\begin{array}{ccccccc}
 [-\text{syll}] - & [+ \text{syll}] & - & [- \text{syll}] & & & \\
 & [+ \text{tens}] & & [+ \text{son}] & & & \\
 & & & [- \text{voic}] & & & \\
 1 & 2 & 3 & \rightarrow & 1\text{ə}-123 / \left[\begin{array}{c} \text{_____} \\ [+ \text{actual}] \end{array} \right]^{14}
 \end{array}$$

Employing C and V notation, where C is any consonant and V is a [+tense] vowel, Rule 7 is the same as the following.

$$\begin{array}{ccccccc}
 \text{C-V-} & \left. \begin{array}{c} \{?\} \\ \{h\} \end{array} \right\} & & & & & \\
 1 & 2 & 3 & \rightarrow & 1\text{ə}-123 / \left[\begin{array}{c} \text{_____} \\ [+ \text{actual}] \end{array} \right]
 \end{array}$$

By this rule the root //k^wi?// becomes /k^wə-k^wi?/ when it is marked [+actual] and //le?// becomes /lə-le?/. Other rules operate on these forms to place stress and convert initial /l/ to /h/ (c.f. III.3).

The //CVC// roots which do not contain a final /h/ or /?/ require a different reduplication pattern, which is also sensitive to the phonological shape of C₁ and the root vowel.

Data Set H

Forms containing an initial sonorant, a /ə/, and a final obstruent or voiced sonorant are characterized by the following data. The [+actual] form is marked by the presence of a C₁ə- prefix if C₁ is a voiceless sonorant and by an /hə-/ prefix if C₁ is a voiced sonorant.

<u>Root</u>	<u>[-actual]</u>	<u>[+actual]</u>	<u>Gloss</u>
//nəq//	nóq+əṃ	hə-ńq+əṃ	Dive
//nəq ^w //	nóq ^w	hə-ńq ^w	Fall asleep

//lə́c̣//	lə́c̣+ət	hə́-ḷc̣+t	Find it
//yə́q̣ʷ//	yə́q̣ʷ+t	hə́-ỵq̣ʷ+t	Burn it
//wə́q̣ʷ//	wə́q̣ʷ+ət+əm	hə́-ẉq̣ʷ+ət+əm	Be carried downstream
//nə́ẉ//	nə́ẉ+əš	hə́-ṇẉ+əš	Put it in
//ʔəm//	ʔəm+ət	ʔə́-ʔ̣m+ət	Sit (up)
//ʔən//	ʔən+nəxʷ	ʔə́-ʔ̣n+ṇəxʷ	Stop

One form which involves what appears to be a longer root also follows this pattern, and only the first three segments are utilized as a conditioning environment.

//lə́mɛʔ//	lə́mɛʔ+t	hə́-ḷmɛʔ+t	Kick it ¹⁵
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Data Set I

All roots containing an initial sonorant, a [+tense] vowel, and a final obstruent or voiced sonorant bear a C₁V-prefix in the [+actual].

<u>Root</u>	<u>[-actual]</u>	<u>[+actual]</u>	<u>Gloss</u>
//yeq//	yéq	yé-ỵəq	To fall
//wɛn//	wén+š	wé-ẉəñ+š	Throw it
//miṭ ^θ //	míṭ ^θ +ət	mí-ṃəṭ ^θ +ət	Mash it
//yaq̣ʷ//	yáq̣ʷ+əm	yá-ỵəq̣ʷ+əm	Sweat
//hɪl//	híl+əm	hí-ʔ̣l+əm	Fall
//heḳʷ//	heḳʷ	hé-ʔ̣ḳʷ	Remember
//ʔim//	ʔím+əš	ʔí-ʔ̣m+əš	Walk
//ʔeṭ ^θ //	ʔéṭ ^θ +ət	ʔé-ʔ̣ṭ ^θ +ət	Wipe it

Data Set J

Roots with an initial obstruent, any vowel, and a final voiced sonorant or obstruent also form the [+actual] with a C_1V - prefix. Those //CC// roots which contain a /ə/ inserted by Rule 1 also pattern like these //CVC// roots (c f. III.1.1).

//CVC// Roots

<u>Root</u>	<u>[-actual]</u>	<u>[+actual]</u>	<u>Gloss</u>
//pay//	páy+t	pá-pəỵ+ət	Bend it
//ʔiç//	ʔíç+ət	ʔí-ʔəç+ət	Slice it
//ʔəh̄//	ʔəh̄+əm	ʔə-ʔəh̄+əm	Weave
//xəʔ//	xəʔ	xə-xəʔ	Ache
//čəʔ//	čəʔ+əm	čə-čəʔ+əm	Hear

//CC// Roots

//ts//	tés	tə-tés	Arrive
//tq̣ʷ//	təq̣ʷ	tə-təq̣ʷ	Break

If the voiced sonorant~/h/ correspondences are again ignored for the present, Data Sets H, I, and J can be analysed as having forms with a C_1V - reduplicative prefix.

Rule 8 C_1V - Reduplication

Rule 8 must account for all cases of [+actual] reduplicative prefixation not handled by Rule 7. That is, Rule 8 must account for the reduplication pattern of all //CVC// roots which do not contain a final voiceless obstruent and all //CC// which are uninflected and which

bear only obstruents as C₁ and C₂. The rule must, therefore, state that C₂ is [-sonorant, -voice] or [+sonorant, +voice], but not [+sonorant, -voice].

Rule 8: C₁V- Reduplication Rule:

$$\begin{array}{ccccccc}
 [-\text{syll}] & - & [+ \text{syll}] & - & \begin{array}{c} [-\text{syll}] \\ \alpha \text{SON} \\ \alpha \text{VOIC} \end{array} & & \\
 1 & & 2 & & 3 & \rightarrow & 12-123 \quad \left[\begin{array}{c} \text{---} \\ [+ \text{actual}] \end{array} \right]
 \end{array}$$

Rule 8 states that forms like //nəq^w// → /nə-nəq^w/, //ʔi^ə// → /ʔi-ʔi^ə/, and /təs/ → /tə-təs/. To arrive at the forms presented in the preceding Data Sets further rules are necessary, they are discussed below.

Since Rules 7 and 8 are concerned with the same phenomenon, reduplication triggered by a [+actual] lexical specification, they can be readily be collapsed into one rule. The major difference between the two rules is that the root vowel of Rule 7 bears a [+tense] specification. The sole reason for this is that no //CVC// roots containing a /ə/ and a final voiceless sonorant have been observed in Cowichan to date. It is assumed here that if such roots do occur in the language, they follow the same pattern as those handled by Rule 7. It is understood that new data may prove this to be a faulty hypothesis, thus necessitating an alteration of the following rule, Rule 9. It is assumed, then, that the specification of the feature [tense] in root vowels is of no consequence to the operation of Rule 9,

therefore, [tense] is not included in the structural description of Rule 9.

Rule 9: [+actual] Reduplication¹⁶

$$\begin{array}{c}
 [-\text{syll}][+\text{syll}][-\text{syll}] \\
 1 \quad 2 \quad 3 \quad \rightarrow
 \end{array}
 \left\{ \begin{array}{l}
 1\emptyset-123 / 1-2- \left[\begin{array}{l} +\text{son} \\ -\text{voic} \end{array} \right] \\
 12-123
 \end{array} \right\} \left[\begin{array}{l} \text{---} \\ +\text{actual} \end{array} \right]$$

Rule 9 implies that Rule 7 is a special case of Rule 8 and that forms which undergo Rule 7 are more marked than those which undergo Rule 8. Otherwise, the effects of Rule 9 are identical to the combined effects of Rule 7, when it does not bear the specification [+tense] on the vowel, and Rule 8.

It is important to note that the [+actual] Reduplication Rule does not alter root vowels in any way. In the examples presented in Data Sets F through J it is evident that root vowels sometimes weaken to schwa or disappear when the reduplicative prefix is present. More precisely, in the environment of a reduplicative prefix root vowels elide if:

- a) the initial consonant of the root is /h/ or /ʔ/,

$$\begin{array}{cc}
 \text{ʔ}\acute{\text{e}}-\text{ʔ}\phi\acute{\text{m}}+\text{e}\acute{\text{t}}^{17} & \text{h}\acute{\text{i}}-\text{ʔ}\phi\acute{\text{i}}+\text{e}\acute{\text{m}}
 \end{array}$$

- b) or the initial consonant of the root is a sonorant and the prefix vowel is /ə/.

$$\begin{array}{cc}
 \text{h}\acute{\text{e}}-\acute{\text{n}}\phi\text{q}+\text{e}\acute{\text{m}} & \text{h}\acute{\text{e}}-\acute{\text{i}}\phi\text{ʔ}+\text{e}\acute{\text{s}}
 \end{array}$$

ʔə-ʔəm	ʔə-ʔm	Sitting
ye-yeq	ye-yəq	Falling
he-hek ^h	he-hk ^h	Remembering
pa-pay	pa-pəy	Bending
lə-leʔ	lə-lʔ	Storing
ɬə-ɬəʔ remains	ɬə-ɬəʔ	Aching
k ^h ə-k ^h ɪʔ remains	k ^h ə-k ^h ɪʔ	Rising
tə-təs remains	tə-təs	Getting there

Before discussing any other rules which operate on these forms, some [-actual]~[+actual] correspondences are discussed which, at first glance, are difficult to account for by the rules presented thus far.

II.1.2.3 Long Vowel Forms:

Forms which exhibit long vowels in the [-actual] are fairly well represented in the data. In the [+actual] these forms appear with a C₁ə- prefix and some of them bear a long vowel or a V-voiceless sonorant-V sequence. Kuipers (1967: 25) says the following regarding long vowels in Squamish.

"The sonant /h/ when preceded and not followed by a vowel is produced as a lengthening of a preceding /i/ or /u/ [/i/ or /a/ in Cowichan] and as a lengthening and opening of a preceding /ə/. . . In other words: the sequences /ih, uh, əh/ [Cw / ih, ah, əh/] before consonants or at the end of a word are produced as long vowels. . ."

He goes on to state that roots with the shape //CVh//, where V is [+tense], are usually shortened to /CV/. Thompson and

Thompson (1971) say of Clallam that distinctively long vowels occur in rapid speech and that these correspond to sequences of /V[?]V/ in careful speech. If such /V[?]V/~ /VV/ correspondences occur in Cowichan, they are of a morphophonemic nature, not phonetic. It is claimed here that conditions similar to the ones mentioned for Squamish and Clallam exist in Cowichan and that long vowel forms correspond to underlying forms which contain sequences of /Vh/ or /V[?]V/. All verbs observed with long vowels are listed below. Those forms for which there is corroborating evidence for the claim made above are listed first and underlying shapes are proposed for these. All others are listed with their [-actual] and [+actual] forms. Data for cognates in other Central Coast Salish languages are taken from Kuipers (1967), (K), and Thompson's unpublished etymology lists, (Th).

[-actual] /néét/ [+actual] /héh-^h?ət/ Name it

Other forms in Cowichan:

/s+ne/ Name (noun)

Cognates:

(K) Squamish nəh/na(?) Name (verb)

s+nəh/s+na(?) Name (noun)

Kuipers states that /h/ does not occur after an /a/ in Squamish. It is inferred from this statement and from his examples involving Name that underlying final /h/ is either dropped or becomes /?/, as is the case in Cowichan (c.f. II.1). The shape of the root meaning Name it is analysed as

forms reflect the conditions of Vowel Reduction characterized by Rule 10.²⁰ Rule 10 formally expresses the fact that root vowels elide in the environment $/[+son]ə-[+son]____/$.

<u>Output of Rule 9</u>	<u>Output of Rule 10</u>	<u>Gloss</u>
nə-neh	nə-nh	Naming
pə-pah	no change	Blowing
ᵑə-ᵑah	no change	Swelling up

Thus, //neh// patterns like //leʔ//

<u>[-actual]</u>	<u>[+actual]</u>	<u>Gloss</u>
leʔ+š	lə-lʔ+š	Store it
neh+t	nə-nh+ət	Name it

and //ᵑah// behaves like //teʔ//

<u>[-actual]</u>	<u>[+actual]</u>	<u>Gloss</u>
teʔ+t	tə-teʔ+t	Try it
ᵑah+m	ᵑə-ᵑah+m̥	Swell up

Cowichan long vowels are analysed here as representations of underlying //Vh// or //VʔV//²¹ and forms which contain them are, like all other verbs in the language, subject to Resonant Glottalization and Resonant Devoicing when marked [+actual] (c.f. III.2 and III.3).

III.2 Resonant Glottalization

The data in Section III.1 demonstrate that non-initial voiced sonorants, that is, resonants, take on a

glottalic character when they appear in [+actual] forms. This glottalization of resonants is not restricted to root consonants alone, all non-initial resonants in a word undergo this process. This fact is reflected in Rule 11.²²

Rule 11: Resonant Glottalization Rule:

$$[-\text{glottal}] \rightarrow [+ \text{glottal}] / \left[\begin{array}{c} [+ \text{segment}] \left[\begin{array}{c} [- \text{syll}] \\ [+ \text{son}] \end{array} \right] \\ [+ \text{actual}] \end{array} \right]$$

Rule 11 must operate after Rule 9, as reduplicative prefixes bearing initial resonants form part of the conditioning environment for the rule, they fill the [+segment] position.

<u>Root</u>	<u>Output of Rules 1-9</u>	<u>Output of Rule 11</u>	<u>Gloss</u>
//lem//	le-lem+ot	le- <u>l</u> em+ot	Look at it
//ʔəh//	ʔə-ʔəh+əm	ʔə- <u>ʔ</u> əh+əm	Weave
//yn//	yen+əm	ye <u>h</u> +əm	Laugh
//əVyx ^w //	əayx ^w +t	əa <u>y</u> x ^w +t	Dig it
//hi1//	hi-hi1+əm	hi-hi <u>1</u> +əm ²³	Fall

Rule 11, however, does not totally account for the appearance of glottalized resonants at surface level. Resonants do not appear glottalized if they occur in the environment /ə___ə glottalized resonant/. This condition is not restricted to only those resonants which are glottalized by Rule 11, it applies to underlying glottalized resonants as well. It is a phonetic property of the

language, and all glottalized resonants, both derived and underlying, are affected by it in the stated environment.

<u>Root</u>	<u>[-actual]</u>	<u>[+actual]</u>	<u>Gloss</u>
//xíh̃//	xíh̃+əm	xí-xən+əm̃	Growl
//ʔəh̃//	ʔəh̃+əm	ʔə-ʔəh̃+əm̃	Weave
but	ʔəh̃+ət	ʔə-ʔəh̃+ət	Weave it
//q̣ ^w əl//	q̣ ^w əl+əm	q̣ ^w ə-q̣ ^w əl+əm̃	Barbeque
//ṭil//	ṭil+əm	ṭi-ṭəl+əm̃	Sing

Rule 12 is a formal statement of this property of Cowichan.

Rule 12: Resonant Deglottalizing Rule:

$$[+glottal] \rightarrow [-glottal] / x_{\left[\begin{array}{c} -\text{syll} \\ +\text{son} \\ +\text{voic} \end{array} \right]} \left[\begin{array}{c} -\text{syll} \\ +\text{son} \\ +\text{voic} \end{array} \right] \left[\begin{array}{c} -\text{syll} \\ +\text{son} \\ +\text{voic} \\ +\text{glot} \end{array} \right]$$

Rule 12 must apply after Rule 10, Vowel Reduction. If Rule 12 precedes Rule 10, all resonants in forms like /ṭi-ṭəl+əm̃/ would appear glottalized, i.e. */ṭi-ṭəl̃+əm̃/.

//ṭil// Sing

<u>Output</u>	<u>Output</u>
Rule 9 ṭi-ṭil+əm	Rule 9 ṭi-ṭil+əm
Rule 11 ṭi-ṭil̃+əm̃	Rule 10 ṭi-ṭəl+əm
Rule 12 _____	Rule 11 ṭi-ṭəl̃+əm̃
Rule 10 *ṭi-ṭəl̃+əm̃	Rule 12 ṭi-ṭəl+əm

It is also noted that Rules 10 and 11 are not crucially ordered with respect to each other. That is, the application

of one of these rules does not prohibit the application of the other on a given form, nor does it cause a form which would not normally undergo the other to do so.

<u>Output</u>		<u>Output</u>	
Rule 9	ᵀi-ᵀil+əm	Rule 9	ᵀi-ᵀil+əm
Rule 10	ᵀi-ᵀəl+əm	Rule 11	ᵀi-ᵀil+əm̥
Rule 11	ᵀi-ᵀəl+əm̥	Rule 10	ᵀi-ᵀəl+əm̥
Rule 12	ᵀi-ᵀəl+əm̥	Rule 12	ᵀi-ᵀəl+əm̥

The combined effects of the Resonant Glottalization Rule and the Resonant Deglottalizing Rule illustrate that in [+actual] forms resonants, (voiced sonorants), appear glottalized unless they occur initially or medially between a schwa and a sequence of schwa and any glottalized voiced sonorant. Further, the Resonant Glottalization Rule imposes a glottalic character on resonants and the resultant glottalized resonants behave phonetically like underlying glottalized resonants.

III.3 Resonant Devoicing

Any C₁ə- reduplication which contains an initial resonant appears with /h/ in place of that resonant at surface level. Such /h/'s are derived by way of the Resonant Devoicing process. This process applies to C₁V- reduplications of roots with underlying //ə//, (c.f. Data Set H, III.1.2.2), as well as C₁ə- reduplications triggered by the presence of a final voiceless sonorant, (c.f. Data Set G,

III.1.2.2). Resonant devoicing changes all initial voiced sonorants to the voiceless sonorant /h/ if they are immediately followed by a sequence of schwa, reduplicative morpheme boundary, and an identical resonant.

<u>Output of Rule 9</u>	<u>Res. Devoicing</u>	<u>Gloss</u>
mə-meʔ+š	hə-meʔ+š	Taking it off
nə-nəw̄+əš	hə-nəw̄+əš	Throwing it
yə-yəq ^w +t	hə-yəq ^w +t	Burning it

The replacement of an initial resonant by /h/ is a process of devoicing. It could perhaps be argued that resonants which are glottalized by Rule 11 condition a resonant ~/h/ alternation that is based on the [+glottal] nature of the segments, but such is not the case. Reduplicated forms that do not undergo Resonant Glottalization do undergo Resonant Devoicing. The Plural aspect is sometimes manifest as a reduplicative prefix, and, while such Plural forms do not undergo Resonant Glottalization, initial resonants are changed to /h/ in the stated environment.

<u>Non-plural</u>	<u>Plural</u>	<u>Gloss</u>
yəx ^w əlélʔ	hə-yix ^w əlélʔ	Eagle
nólq+əm	hə-nólq+əm	Dive

It is claimed that the operation of Resonant Devoicing is dependent on the occurrence of a morpheme boundary feature, but it is not clear that this segment is a crucial part of the conditioning environment. That is, a strictly phonetic

environment, relying only on a following schwa and identical resonant sequence, may ultimately emerge as the conditioning factor for Resonant Devoicing. However, no data which support such a solution have been observed to date. No roots of the shape //məm, nən, ləl, yəy, wəw// have been observed, and while exceptions to the Resonant Devoicing Rule have arisen, they do not provide convincing evidence in support of the phonetic solution.

s+nə-néy-məx ^w	Nanaimo ²⁴
lélələ	Yellow ²⁵

These forms are of little value in providing a solution to the question of morphophonemic or phonetic conditioning, as they may simply be exceptions to the principle of Resonant Devoicing. Due to the lack of any convincing evidence of phonetic conditioning of Resonant Devoicing this analysis employs a morphophonemic analysis. The morphophonemic treatment adequately characterizes those cases of Resonant Devoicing observed in Cowichan to date and, in light of future evidence which indicates that Resonant Devoicing is phonetic, the adoption of a phonetic solution would generalize the rule, thereby simplifying the grammar.

Rule 13: Resonant Devoicing Rule:

$$\begin{bmatrix} -\text{syll} \\ +\text{son} \\ +\text{voic} \end{bmatrix}_1 \rightarrow \begin{bmatrix} -\text{syll} \\ +\text{son} \\ +\text{cont} \\ -\text{voic} \end{bmatrix} \# \text{---} \text{ə} - \begin{bmatrix} -\text{syll} \\ +\text{son} \\ +\text{voic} \end{bmatrix}_1 \quad 26$$

It was demonstrated above that glottalization is not crucial to the operation of the Resonant Devoicing Rule, therefore, Rule 13 is not ordered with respect to the Resonant Glottalization Rule or the Resonant Deglottalizing Rule. The shape of the root vowel is of no consequence to the application of Rule 13, so the Vowel Reduction Rule and the Resonant Devoicing Rule are not critically ordered with respect to one another.

Since the rules have already been presented, the following examples are based on forms which have undergone these rules as well as the [+actual] Reduplication Rule, which must apply before Resonant Devoicing because it is just those affixes which are added by the [+actual] Reduplication Rule that are altered by Rule 13.

<u>Input to</u> <u>Rule 13</u>	<u>Output of</u> <u>Rule 13</u>	<u>Gloss</u>
C ₁ V- Reduplication:		
nə-ńđ+əǹ	hə-ńđ+əǹ	Diving
lə-ĺć+t	hə-ĺć+t	Finding it
C ₁ ə- Reduplication:		
lə-ĺʔ+əš	hə-ĺʔ+əš	Storing it
mə-ńʔ+əš	hə-ńʔ+əš	Taking it off

Resonant Devoicing functions to change prefix-initial /m, n, l, y, w/ to /h/ if followed by /ə/, a prefix boundary marker, and an identical resonant in all reduplicative prefixes, including [+actual]. This process may be

conditioned by phonetic properties alone, in which case *all* initial resonants become /h/ when followed by schwa and an identical resonant.

III.4 Rule Ordering

It was stated earlier that some rules are ordered with respect to some others in the correct derivation of Cowichan words, and that an opposite ordering yields unacceptable derivations, e.g. Rule 12 must follow Rule 10 in a correct derivation (c.f. III.2). In such cases the rules are extrinsically ordered. That is, the first rule *must* precede the second or improper derivations will be produced. Other rules feed subsequent rules, they create forms which would not otherwise undergo the later rule. Such rules are intrinsically ordered. Some rules are not ordered with respect to each other, their relative order does not affect the derivation in any way.

Ordering, either extrinsic or intrinsic, is not a necessary property of a grammar, but it provides a means of simplifying other areas of the grammar, notably the structural descriptions and environment statements of rules. It is to be understood that the ordering conditions placed on the rules presented in this analysis are merely an expedient in the overall structuring of rules, and that such conditions could be dispensed with by reformulating the structural descriptions and environment statements of the rules.

The order which the rules presented in Sections I.1-

III.3 must assume is as follows. The rules are discussed in the order in which they appear in the analysis, and for each rule its position in the set of rules is justified. Since Rule 5 is a reformulation of Rule 3 and Rule 6 replaces Rule 4, Rules 3 and 4 are not discussed here, nor are Rules 7 and 8, which have been collapsed into Rule 9.

Rule 1: Vowel Insertion Rule I:

$$[CC]\# \rightarrow [C\text{ə}C]\#$$

Rule 1 inserts a /ə/ medially in //CC// roots when they do not appear with suffixes.

Rule 2: Vowel Insertion Rule II:

$$[-\text{syll}][-\text{syll}] \rightarrow \left\{ \begin{array}{l} [-\text{syll}][-\text{syll}] \left[\begin{array}{l} +\text{syll} \\ \text{otens} \\ \text{oback} \\ -\text{high} \end{array} \right] / \left[\begin{array}{cc} \overline{-\text{son}} & \overline{-\text{son}} \\ & [+verb] \\ & [-\text{actual}] \end{array} \right] \\ [-\text{syll}] \left[\begin{array}{l} +\text{syll} \\ \text{otens} \\ \text{oback} \\ -\text{high} \end{array} \right] [-\text{syll}] / \left[\begin{array}{c} \overline{+verb} \end{array} \right] \end{array} \right\} +t$$

Rule 2 inserts an unspecified vowel into //CC// roots when they appear with a suffix. If the form is [-actual] and only obstruents are present in the root, the inserted vowel appears after C₂, otherwise the vowel is inserted medially.

a) Rule 2 is Unordered with respect to Rule 1.

Rule 1 requires that no suffixes follow the root in order to

operate, while Rule 2 relies on the presence of a suffix. The two rules are mutually exclusive.

Rule 5: Tense Specification Rule:

$$[\text{otense}] \rightarrow \left\{ \begin{array}{l} [+tense] \\ [\alpha tense] \end{array} \right\} / [-\text{syll}] \frac{\quad}{[+\text{syll}]} / ([-\text{syll}]) [-\text{syll}] /$$

$$\left[\begin{array}{l} \langle [+strong] \rangle \\ [\alpha actual] \end{array} \right] +t$$

Tense Specification assigns a value, + or -, to the feature [tense] of vowels inserted in //CC// roots and the unspecified vowels of //CVCC// roots.

b) Rule 5 is Unordered with respect to Rule 1.

The /ə/ vowel inserted by Rule 1 is fully specified and, therefore, does not fit the required environment for the operation of Rule 5.

c) Rule 5 Follows Rule 2.

Rule 5 specifies the feature [tense] for vowels inserted by Rule 2 as well as for the underlying vowels of //CVCC// roots. Rule 5 must follow Rule 2.

Rule 6: Back Specification Rule:

$$[\text{oback}] \rightarrow \left\{ \begin{array}{l} [+back] / ([-\text{syll}]) \left\{ \begin{array}{l} k^w \\ k^w \\ q^w \\ q^w \\ \chi^w \end{array} \right\} / [-\text{syll}] \frac{\quad}{\begin{array}{l} [+syll] \\ +tens \end{array}} \\ [-back] \end{array} \right\}$$

The Back Specification Rule assigns a + or - value to the [back] feature of those vowels specified for [tense] by Rule 5.

d) Rule 6 is Unordered with respect to Rule 1.

Rule 6 is unordered with respect to Rule 1 for the same reasons as Rule 5 is.

e) Rule 6 Follows Rule 5.

The specification of the feature [back] is partially dependent upon the specification of [tense] supplied by Rule 5, [+tense] vowels are marked [+back] in the environment of a /k^w, ḳ^w, q^w, q̣^w, x^w/, all other [+tense] vowels and all [-tense] vowels are marked [-back] by Rule 6.

f) Rule 6 Follows Rule 2.

It has been demonstrated that Rule 6 follows Rule 5 and that Rule 5 follows Rule 2, therefore, Rule 6 must also follow Rule 2.

Rule 9: [+actual] Reduplication Rule:

$$\begin{array}{ccc}
 [-\text{syll}] & - & [+ \text{syll}] & - & [-\text{syll}] \\
 1 & & 2 & & 3
 \end{array}
 \rightarrow
 \left\{
 \begin{array}{l}
 1\emptyset-123 / 1-2- \left[\begin{array}{c} +\text{son} \\ -\text{voic} \end{array} \right] / \left[[+ \text{actual}] \right] \\
 12-123
 \end{array}
 \right\}$$

Rule 9 adds a reduplicative prefix, either /C₁∅-/ or

/C₁V-/, to //CVC// roots and to //CC// roots with a schwa inserted by Rule 1.

g) Rule 9 Follows Rule 1.

Rule 9 applies only to forms with the shape /CVC/. In order for this rule to operate on //CC// forms which do not precede a suffix the inserted vowel, introduced by Rule 1, must already be present.

h) Rule 9 Precedes Rules 2, 5, and 6.

The combined effects of Rules 2, 4, and 5 are the placement and specification of inserted vowels in //CC// roots. All //CC// roots appear with a medial vowel when they are marked [+actual]. If these rules did not follow Rule 9, all //CC// roots would appear with a reduplicative prefix as well as an inserted vowel.

Rule 10. Vowel Reduction Rule:

$$[+syll] \rightarrow \left\{ \begin{array}{l} \phi / \left\{ \begin{array}{l} [+son] \quad [+syll] \\ [-voic] \quad [+tens] \end{array} \right. - \left. \begin{array}{l} [+son] \\ [-voic] \end{array} \right. \underline{\quad} \\ \left. \begin{array}{l} [+son] \\ [-tens] \end{array} \right. \quad \left. \begin{array}{l} \emptyset \\ C \end{array} \right. \left. \begin{array}{l} [+syll] \\ [+tens] \end{array} \right. - \quad \left. \begin{array}{l} C \\ \underline{\quad} \end{array} \right. \end{array} \right\}$$

The Vowel Reduction Rule operates on root vowels in forms bearing a reduplicative prefix.

i) Rule 10 is Unordered with respect to Rule 1.

The only //CC// roots appearing without suffixes which have been observed to date contain obstruents as both C₁ and C₂. The only /obstruent-V-obstruent/ roots which are affected by the Vowel Reduction Rule contain [+tense] vowels, but these //CC// roots are expanded with a /ə/. Therefore, for the data contained in this analysis Vowel Reduction does not affect those //CC// roots which undergo Rule 1.

j) Rule 10 is Unordered with respect to Rules 2, 5 and 6.

None of the forms operated on by Rules 2, 5, and 6 appear in the [+actual] with a reduplicative prefix, so the outputs of these rules do not meet the requirements for the Vowel Reduction Rule, which affects only those roots which occur with a reduplicative prefix. Conversely, because the Vowel Reduction Rule relies on the presence of a reduplicative prefix, it is not affected by the prior application of Rules 2, 5, and 6.

k) Rule 10 Follows Rule 9.

The presence of a reduplicative prefix is an essential part of the conditioning environment for Vowel Reduction. Such prefixes must be inserted by Rule 9 before Rule 10 can apply.

Rule 11: Resonant Glottalization Rule:

$$[-\text{glottal}] \rightarrow [+ \text{glottal}] / \left[\begin{array}{c} [+ \text{segment}] \left[\begin{array}{c} -\text{syll} \\ +\text{son} \end{array} \right] \\ [+ \text{actual}] \end{array} \right]$$

The Resonant Glottalization Rule imposes a glottalic character on all but initial resonants in a word marked [+actual].

1) Rule 11 Follows Rule 9.

Rule 9 prefixes a /consonant-vowel/ reduplicative sequence to roots, consequently the initial consonant assumes the role of initial segment in the environment statement of the Resonant Glottalization Rule. If Rule 9 did not apply before Rule 11, incorrect forms would be derived.

<u>Output</u>	<u>Output</u>
Rule 11 nəq+əḿ	Rule 9 nə-nəq+əḿ
Rule 9 *nə-nəq+əḿ	Rule 11 nə-ḥəq+əḿ
(>*hə-nq+əḿ)	(>hə-ḥq+əḿ)

Therefore, Rule 11 must be ordered after Rule 9.

m) Rule 11 Follows Rule 1.

It has been demonstrated that Rule 11 follows Rule 9 and that Rule 9 follows Rule 1, thus Rule 11 follows Rule 1.

n) Rule 11 is Unordered with respect to Rules 2, 5, and 6.

No prefixes are added to [+actual] //CC// roots when

they precede a grammatical suffix, therefore, all resonants that appear on the surface in such forms are also in the underlying forms, so Rule 2 does not critically affect the sequencing of consonants with respect to the Resonant Glottalization Rule. Rule 11 does not appeal to vowel qualities, so Rules 5 and 6, the vowel specification rules, do not affect the operation of Rule 11. On the other hand, the feature [glottal] is of no consequence to Rules 2, 5, and 6, the application of Rule 11 prior to the application of these rules would not affect the fully derived form in any way.

o) Rule 11 is Unordered with respect to Rule 10.

It is demonstrated in Section III.2 that the relative order of Rules 10 and 11 is not crucial to the combined output of these two rules.

Rule 12: Resonant Deglottalizing Rule:

$$[+glottal] \rightarrow [-glottal] / X_{\left[\begin{array}{c} -syll \\ +son \\ +voic \end{array} \right]} \left[\begin{array}{c} -syll \\ +son \\ +voic \\ +glot \end{array} \right] \text{e}$$

The function of Rule 12 is to switch the feature [+glottal] to [-glottal] in resonants which appear after a /e/ and before a /e-glottalized resonant/ sequence.

p) Rule 12 Follows Rule 11.

If Rule 12 were ordered before Rule 11, all non-

initial resonants would be glottalized at the surface level in [+actual] forms. That is, Rule 11 would nullify all effects of the Resonant Deglottalizing Rule if it was ordered before that rule.

q) Rule 12 is Unordered with respect to Rule 1.

Like Rule 11, Rule 12 is unordered with respect to Rule 1 in this analysis because no //CC// forms which reduplicate in the [+actual] have been observed with a non-obstruent.

r) Rule 12 is Unordered with respect to Rules 2, 5, and 6.

The only //CC// forms which appear with a grammatical suffix and with a /ə/ vowel in the [+actual] contain only obstruents, (c.f. Ch. 3, Fn. 9), if these forms do contain a resonant, it is the {+m} intransitivizing suffix, which appears word finally. Therefore, [+actual] //CC// roots never contain a resonant in a /ə___ə Resonant/ environment, nor do //CVCC// roots. This being the case, forms derived from //CC// or //CVCC// roots never meet the requirements for Resonant Deglottalizing, and are not affected by its relative point of application in the derivation.

s) Rule 12 Follows Rule 9.

It was demonstrated that Rule 12 must follow Rule 11 and it is claimed below that it must also follow Rule 10. Both rules, 10 and 11, must follow Rule 9, so Rule 12 must

also follows Rule 9.

t) Rule 12 Follows Rule 10.

If Rule 12 precedes Rule 10, certain resonants do not undergo Resonant Deglottalizing where they should (c.f. III. 2). This is due to the fact that a /ə/ which is derived from a [+tense] vowel by Rule 10 can function as part of the conditioning environment for the Resonant Deglottalizing Rule.

Rule 13: Resonant Devoicing Rule:

$$\begin{bmatrix} -\text{syll} \\ +\text{son} \\ +\text{voic} \end{bmatrix}_1 \rightarrow \begin{bmatrix} -\text{syll} \\ +\text{son} \\ -\text{voic} \end{bmatrix} / \# \text{---} \text{ə-} \begin{bmatrix} -\text{syll} \\ +\text{son} \\ +\text{voic} \end{bmatrix}_1$$

The Resonant Devoicing Rule changes an initial /m, n, l, y, w/ of a reduplicative prefix to /h/.

u) Rule 13 Follows Rule 9.

Rule 9 creates the appropriate environment for the application of Rule 13 and must precede it.

v) Rule 13 Follows Rule 1.

Rule 13 follows Rule 9 and Rule 9 follows Rule 1, therefore, Rule 13 follows Rule 1.

w) Rule 13 is Unordered with respect to Rules 2, 5, and 6.

Forms which undergo Rules 2, 5, and 6 do not take reduplicative prefixes in the [+actual], but Rule 13 affects

only prefix-initial segments, therefore, these rules are mutually non-affecting.

x) Rule 13 is Unordered with respect to Rule 10.

The vowel contained in the prefix is the only vowel that is critical in the application of the Resonant Devoicing Rule. Rule 10, however, affects only root vowels. The ordering of Rule 10 before Rule 13 is of no consequence to the structure of the derived form. Since the only forms which undergo Resonant Devoicing contain a /ə/ in the prefix, and the only consonantal feature that is crucial to the Vowel Reduction Rule if a prefix contains a /ə/ is [sonorant], Rule 13 is not ordered before Rule 10, as both the input and output of Rule 13 contains [+sonorant] consonants in prefix-initial and root-initial positions.

y) Rule 13 is Unordered with respect to Rules 11 and 12.

That glottalization is not a critical feature in the Resonant Devoicing process is demonstrated in Section III.3, so the prior application of Rule 11 or Rule 12 does not affect Rule 13. Conversely, since only non-initial segments are affected by Rules 11 and 12, Rule 13 need not apply before either of these rules.

Table III illustrates the order in which the rules apply. Only those rules connected by lines are ordered with respect to each other, the higher rule being ordered ahead of the lower.

TABLE III: Rule Order

Rule 1	Vowel Insertion I
Rule 9	[+actual] Reduplication
Rule 2	Vowel Insertion II
Rule 5	Tense Specification
Rule 6	Back Specification
Rule 10	Vowel Reduction
Rule 11	Resonant Glottalization
Rule 12	Resonant Deglottalizing
Rule 13	Resonant Devoicing

The derivation of Cowichan [+actual] forms from their underlying lexical entries to their phonetic surface shapes involves these nine rules and a few low level phonetic rules, such as stress and epenthesis rules and rules prescribing the phonetic manifestations of glottalized resonants.

The following examples illustrate the combined effect of all rules presented in this analysis.

	//θx// Push	([-strong])
	[-actual]+t	[+actual]+t
Rule 1	_____	_____
Rule 9	_____	_____
Rule 2	θx $\begin{bmatrix} +\text{syll} \\ \text{otens} \\ \text{oback} \\ -\text{high} \end{bmatrix}$ +t	θ $\begin{bmatrix} +\text{syll} \\ \text{otens} \\ \text{oback} \\ -\text{high} \end{bmatrix}$ x+t

Rule 5	$\theta \underset{\cdot}{x} \begin{bmatrix} +\text{syll} \\ -\text{tens} \\ \text{oback} \\ -\text{high} \end{bmatrix} +t$	$\theta \begin{bmatrix} +\text{syll} \\ +\text{tens} \\ \text{oback} \\ -\text{high} \end{bmatrix} x+t$
Rule 6	$\theta \underset{\cdot}{x} \begin{bmatrix} +\text{syll} \\ -\text{tens} \\ -\text{back} \\ -\text{high} \end{bmatrix} +t$	$\theta \begin{bmatrix} +\text{syll} \\ +\text{tens} \\ -\text{back} \\ -\text{high} \end{bmatrix} x+t$
Rule 10	_____	_____
Rule 11	_____	_____
Rule 12	_____	_____
Rule 13	_____	_____

After stress and epenthesis rules apply the forms are:

$\theta \underset{\cdot}{x} \acute{a} +t$

$\theta \acute{e} x +t$

Phonological rules describe the phonetic manifestation of each segment and the forms then appear at the surface level as

$[\theta \underset{\cdot}{x} \acute{a} t]$

$[\theta \acute{e} x t]$

// $\theta V y q^w$ // Dig (a hole)

	$[-\text{actual}] +t$	$[\text{+actual}] +t$
Rule 1	_____	_____
Rule 9	_____	_____
Rule 2	_____	_____
Rule 5	$\theta \begin{bmatrix} +\text{syll} \\ -\text{tens} \\ \text{oback} \\ -\text{high} \end{bmatrix} yq^w t$	$\theta \begin{bmatrix} +\text{syll} \\ +\text{tens} \\ \text{oback} \\ -\text{high} \end{bmatrix} yq^w t$
Rule 6	$\theta \begin{bmatrix} +\text{syll} \\ -\text{tens} \\ -\text{back} \\ -\text{high} \end{bmatrix} yq^w +t$	$\theta \begin{bmatrix} +\text{syll} \\ +\text{tens} \\ +\text{back} \\ -\text{high} \end{bmatrix} yq^w +t$

Rule 10	_____	_____
Rule 11	_____	θaýq ^w +t
Rule 12	_____	_____
Rule 13	_____	_____

Stress rules yield the forms:

θéyq^w+t θáýq^w+t

After the application of other phonological rules these two forms appear as:

	[θáýq ^w t]	[θáýq ^w t]
	//lə́ç// Find	
	[-actual] t	[+actual] t
Rule 1	_____	_____
Rule 9	_____	lə-lə́ç+t
Rule 2	_____	_____
Rule 5	_____	_____
Rule 6	_____	_____
Rule 10	_____	lə-lç+t
Rule 11	_____	lə-ḷç+t
Rule 12	_____	_____
Rule 13	_____	hə-ḷç+t

After stress has applied:

lə́ç+t hə-ḷç+t

After all other rules, including epenthesis, have applied:

[lʰáçət] [hʰáɫʰçt]

CHAPTER IV

SUMMARY

It has been demonstrated that Cowichan words are based on roots. Roots are treated here as lexical entries at the underlying level, they contain a phonological component, a string of phonological distinctive feature matrices, and a lexical component bearing features which specify part of speech, (e.g. [+verb]), aspectual content, (e.g. [+actual]), or morphological peculiarities of forms or sets of forms, (e.g. [+strong], c.f. III.1.1).

Forms which bear a [+actual] specification have been shown to appear at surface level with various manifestations, according to their underlying phonological shapes. Those [+actual] forms based on a //CVC// root appear with a reduplicative prefix and undergo the processes of Vowel Reduction and Resonant Devoicing. When //CC// roots occur without suffixes they too take a reduplicative prefix in the [+actual]. The shape of the reduplicative prefix is conditioned by the nature of the final consonant in the root. Forms with //CVCC// roots appear with a [+tense] /a/ or /e/ in place of an underlying unspecified vowel and vowelless roots with a following suffix appear with /a/ or /e/. The /a/ appears in the environment of a following (post)velar labialized stop or labialized uvular fricative, elsewhere /e/ appears. It was also demonstrated that all [+actual] forms undergo Resonant Glottalization.

It has been noted that for some forms the specification of the feature [strong] is a conditioning factor in [-actual] ~ [+actual] oppositions. This feature differentiates those //CC// roots which take [+tense] vowels in the [-actual] from those which do not. Therefore, [+strong] //CC// roots maintain the [-actual]~[+actual] opposition by vowel position alone.

While this analysis is somewhat limited in its scope, it provides a look at some of the morphophonemic workings of the Cowichan language. It is the task of future research to provide a more complete picture of the phonology of Cowichan by incorporating all suffixes, the remaining grammatical ones and the lexical suffixes, and all aspectual categories into an analysis such as the one presented here, and to account for vowel alternations in terms of this broader analysis. Even when this has been accomplished, a full appreciation of Cowichan morphophonemics can only be achieved when these properties of the language are presented as a unitized part of a description of the whole language.

FOOTNOTES

CHAPTER I

- 1 See Barnett (1955)

CHAPTER II

1 An underlying form is defined as the phonological shape assigned to a morpheme or string of morphemes before any rules have applied to that form.

2 Sequences involving a /ʔ/ and a resonant are phonetically identical to glottalized resonants. They appear pre-glottalized when they occur intervocally after a primary stressed vowel, and post-glottalized everywhere else.

Further evidence of underlying glottalized resonants can be extracted from the analysis of Actual aspect (c.f. III.1.2.1). All //CVCC// roots form the Actual by taking an /a/ or an /e/ as the root vowel, they do not reduplicate. If the form meaning Put it in is analysed as a //CVCC// root, it is the only exception of its kind to the analysis, as it reduplicates like //CVC// forms in the [+actual].

<u>Root</u>	<u>[-actual]</u>	<u>[+actual]</u>	<u>Gloss</u>
*//nVwʔ//	nḗwʔ+əš	*nVwʔ+əš	Put it in
//nəw̃//	nḗw̃+əš	hḗ-ñw̃+əš	Put it in

3 The form /hí-ʔḷ+əḿ/ differs from /hí-hil+əḿ/ not only in that it has undergone an /h/→/ʔ/ rule, but also the Vowel Reduction Rule (c.f. III.1.2.2).

4 Length is not treated as an underlying distinction in this analysis. It is demonstrated in Section III.1.2.3 that at least some long vowels which appear on the surface are reflections of underlying sequences of vowel-voiceless resonant. Further research will probably prove long vowels to be phonological representations of underlying sequences, therefore, length is omitted from the segment inventory. Long vowels which appear at surface level are represented by a sequence of two vowels, i.e. /ii, ee, aa, uu/.

5 Section II.2 is intended to provide the reader with a general knowledge of the possible forms of verbs. It is not intended to be, and should not be construed as a complete description of the Cowichan verb.

6 This is true only at the word level. In a sentential context forms without {+s} can function nominally if they appear in nominalized phrases.

7 Analyses of other Coast Salish languages have treated the {+m} found in passives as being the same suffix as that found in intransitives. However, in those languages the subject of a passive is expressed with a clitic, as it is with transitives and intransitives. In Cowichan subject clitics do not occur with passives, the subject is expressed by a suffix which marks not only person and number, but passive also. It is claimed that the Cowichan {+m} passive marker is homophonous with the intransitivizing {+m}.

8 As stated earlier, the {+nəx^w} and {+stəx^w} suffixes appear as /+n+ / and /+st+ / when followed by anything but the /+əs / 3rd Person subject marker.

9 {+θət} is one of a class of suffixes which condition underlying //e// root vowels to become /a/.

10 Noun phrases may be directly or obliquely related to the verb. A direct noun phrase adjunct is similar to a nominative or accusative noun phrase in English.

The man saw the bear.

ni? ləm+nəx^w+əs t^θə s+wəy[?]qé? t^θə s+pé[?]eθ.

He saw the bear.

ni? ləm+nəx^w+əs t^θə s+pé[?]eθ.

An oblique noun phrase is similar to a prepositional phrase, and is introduced by a general preposition in Cowichan.

ni? cən k^wt+éls ə[?] t^θə kápi.

I poured (of) the coffee.

11 In this and following examples It used as an object is to be understood as 3rd Person, i.e. him/her/it/them. The same is true of subjects indicated by the /+əs / suffix.

12 Final /əy[?]/ is reanalysed as /i[?]/ if it does not bear primary stress.

13 The Resultative reduplication of //ləč[?]// is /lə-ləč[?]/. The initial /l/ becomes /h/ by the Resonant Devoicing Rule, (c.f. III.3), and subsequently elides when preceded by the {s+} prefix.

14 The form //q^wəyiləš// contains the {+š} transitivizing suffix. If this form was, at one time, analysable as a root and a suffix, such is no longer the case. The form occurs before lexical suffixes, but if this were a root and a suffix one would expect {+š} to occur after that lexical suffix, not before it.

15 The {+nəx^w} suffix is optionally realised as /+nəx^w/ if the root to which it is attached has an underlying schwa. When /+nəx^w/ occurs it bears primary stress

lək^w+nəx^w
or Break accidentally
lək^w+néx^w

CHAPTER III

1 The lexical items discussed here are viewed as entries in the lexicon of a grammar. The model employed in this analysis follows that proposed by Chomsky in Aspects of the Theory of Syntax. The entries of the lexicon proposed in Chomsky's analysis are underlying forms which have not undergone any derivational inflection. Therefore, forms which are neutral with respect to the category [verb] would have to be reanalysed as [+verb] before they could be specified for features such as [actual]. A good description of the whole Aspects model is presented in Chapter 8 of Grinder and Elgin (1973).

2 Whenever a root is mentioned it is to be considered as an abbreviation for a fully specified lexical entry. The segments of the root represent distinctive feature matrices, (which are not fully specified for the vowel in //CVCC// roots (c.f. III.1.1). Other features associated with the lexical entry are understood unless they are explicitly mentioned in the context of the root. The values of such understood features are not crucial to the discussion at hand.

3 In a complete formalization of Cowichan grammar phenomena like stress readjustment, vowel deletion, and epenthesis would be formulated as phonological rules. Resonant Glottalization and Resonant Devoicing would be formulated as morphophonemic rules.

4 Thompson and Thompson (1971:274)

5 Vowelless roots do not take an inserted vowel when they occur with certain suffixes.

6 This form involves the {+il} inchoative suffix.

7 The /#/ is a morphophonemic boundary feature. It is crucial to the operation of this rule, and indicates a word boundary. That is, no suffixes can follow roots which undergo this rule.

8 Stanley (1967) introduces the notion of unspecified features in dictionary (lexical) entries. His concern in that paper is phonological redundancy within morphemes. His notion of unspecified features has been extended here to handle morphophonemic redundancies which are conditioned not only by phonological sequencing, but by feature specifications in the non-phonological component of the lexical entry as well. Stanley's tactic is to leave a feature specification blank when it is not specified as either + or -. The [o] used in this analysis is comparable to Stanley's blank. It is understood that [o] has no value, that is, the presence of a [o] in a feature specification does not block the application of a rule which would operate if [o] were replaced by + or - and vice versa.

9 The multiple environment statement follows those discussed by Chomsky and Halle (1968: 31-2) and Harms (1968: 66-8).

[-syll]____/[-syll]/ $\left[\begin{array}{c} \text{_____} \\ [+strong] \\ [\alpha actual] \end{array} \right]$ may be understood as an abbreviation for:

$\left[\begin{array}{c} C_1 C_2 \text{_____} \\ [+strong] \\ [\alpha actual] \end{array} \right]$, $\left[\begin{array}{c} C_1 C_2 \text{_____} \\ [\alpha actual] \end{array} \right]$, $\left[\begin{array}{c} C_1 \text{_____} C_2 \\ [+strong] \\ [\alpha actual] \end{array} \right]$, $\left[\begin{array}{c} C_1 \text{_____} C_2 \\ [\alpha actual] \end{array} \right]$

Some exceptions to the Tense Specification Rule have been observed in Cowichan.

<u>Root</u>	<u>[-actual]</u>	<u>[+actual]</u>	<u>Gloss</u>
//čt//	čté+m	čét+ə́m	Crawl
//pt//	pté+m	pét+ə́m	Ask
//q ^w c//	q ^w có+m	q ^w é́c+ə́m	Swell up

All three exceptions have [+anterior,+coronal] obstruents as C₂ and all occur with the {+m} intransitivizing suffix. These are the only three forms where just these conditions exist. It may prove that future evidence will motivate a vowel laxing rule in those cases where [+actual] forms of //CC// roots with a [+anterior,+coronal] obstruent as C₂ are followed by the {+m} intransitivizing suffix.

10 At least some //CVCC// roots are probably based on //CVC// roots historically. Davis (1970: 57) discusses stem extenders in Comox. He states that the canonic shape of stems is /CVC/ in Comox and describes stem extenders as consonants which sometimes suffix to such stems. He goes on to state that stem extenders are, for a few forms, separable from the stem, the stem can occur with or without the extender. More often though, stem extenders are bound to the stems with which they occur in Comox.

It seems to be the case in Cowichan that all //CVCC// forms are monomorphemic at this stage of the language. No instances have been discovered where a //CVC// root can appear with an optional C₃. Furthermore, the //CVCC// forms behave differently than the //CVC// roots. This makes it look as though the C₃ has been associated with the //CVC// configuration for a long time if, in fact, it is even a stem extender.

The notion of stem extenders was introduced by Mary Haas in a discussion of Nootka stems. The stem extenders are discussed in some detail in Haas (1974).

11 The general conditions of the Back Specification Rule, namely that a [+tense] vowel is [+back], /a/, in the environment of a /k^w, ḳ^w, q^w, q̣^w, x^w/ and [-back], /e/, elsewhere, reflect historical processes in Cowichan. Thompson, Thompson, and Efrat (1974: 194) state that:

"Halkomelem has a . . . fronting of earlier */á/ and lowering of earlier */ú/, it also retains low back reflexes of */á/ in certain rounded environments."

That is, */ú/ merged with */á/, and */á/ went to */é/ in the environment of /k^w, ḳ^w, q^w, q̣^w, x^w/.

12 As mentioned in Section II.2, a few forms with //CCVC// and //CV// roots have been observed. The two forms fitting this description pattern like //CVC// roots and so do those forms which look as though they contain long vowels (c. f. III.1.2.3).

13 This form invariably appears as [ném?] at surface level. The form has a very high rate of occurrence in Cowichan, so it is likely that the /[?]m/ sequence has been re-analysed as a /m/ in plain intransitive form. The [+actual] form also behaves as though it contains a glottalized resonant in that the underlying /n[?]/ sequence is reanalysed as a plain /n/ by the Resonant Deglottalizing Rule, but still patterns like a //CV-voiceless sonorant// root.

14 The /-/ which appears in the structural change portion of Rule 7 and in all examples of reduplicated [+actual]

forms is a morphophonemic boundary feature. The presence of /-/ between two (morphological) segments indicates that one is a reduplication of the other, (unless it is used to divide units which are indexed with numbers in the structural description and structural change, e.g. A-B-C). In this case the first segment is a partial re- 1 2 3 duplication of the second. The presence of this feature in the structural description of subsequent rules is crucial to their operation.

15 If //lǝmǝʔ// is not a root, then the suffix, which would probably be /+eʔ/ and which has not been observed elsewhere in the language, is very closely bound to the root. All forms involving this one appear as /l(ǝ)mǝʔ/ or lǝmǝʔ/.

lǝméʔ+nǝx ^w	Kick it (accidentally)
lǝm-lǝméʔ+t(+ǝs)	Kick it (plural)
lǝmǝʔ+éls	Kick someone/Shove off (in canoe) with foot
lǝmǝʔ+áyθ+ǝt	Kick it in the mouth

16 Some exceptions to this rule have been observed, they are listed below.

<u>[-actual]</u>	<u>[+actual]</u>	<u>Gloss</u>
ʔǝšǝl	ʔí-ʔšǝḷ	Paddle
k ^w éc+ǝm	k ^w ǝ-k ^w c+éṃ	Holler
čéł+ǝm	čǝ-čéł+ǝṃ	Hear
ʔǝłtǝn	ʔí-ʔłtǝṇ	Eat
yáys	yáỵs	Work
hǝyéʔ	hǝỵǝʔ	Depart

17 The /φ/ is used here to indicate the position which an elided vowel held before its disappearance.

18 /łéél/ probably involves the /+il/ inchoative lexical suffix.

19 The form /łǝ-łx^wáʔǝł/ might have an underlying /x^w/ in the reduplicative prefix, /x^w/ disappears in other forms in the language, e.g. /šák^w+ǝm/ Bathe, but /šáx^wǝk^w+ǝṃ/ Bathing. On the other hand, it may be that the reduplicative prefix ignores any consonants which appear between C₁ and the root vowel.

20 /xéém/ does not conform to the Vowel Reduction Rule.

21 The data presented in this section pattern as though they have a root-final /h/ or /ʔ/ and cognates substantiate such a claim, but some long vowel forms in Cowichan are cognate with forms which do not contain an /h/ or a /ʔ/, /túux^w/ Nine, Comox- /tiqix^w/ Nine, Songish- /tək^wəx^w/ Nine. It is improbable that such forms contain an /h/ or a /ʔ/ as most others do.

Though it is not formally stated in this thesis, /h/ in Cowichan is analysed as being similar in its behavior to the /h/ in Squamish. That is, /h/ is manifest as a lengthening of a preceding vowel when it does not appear at surface level, e.g. /páam, s+pəhám-šəŋ/.

22 Rule 11 does not apply to [+actual] forms alone. The Resultative aspect also conditions Resonant Glottalization. Therefore, in a complete grammar of Cowichan the environment statement of Rule 11 would account for [+actual] and [+resultative] specifications.

Rule 11 assumes that all affixes would either be incorporated into the lexical specification of the root or that each would bear a copy of the lexical features of the root.

23 Sequences involving a /ʔ/ and a glottalized resonant behave phonetically exactly like sequences of /ʔ/ and resonant or glottalized resonant (c.f. II.1).

24 Resonant Devoicing operates before any non-aspectual prefixes are added to the word, that is, forms devoice their prefix-initial resonants in the appropriate environments and then elide the /h/ when it follows a non-aspectual prefix (c.f. II.1).

25 It is indeterminate at this point whether this form involves a reduplicative prefix or not, but the native informant who provided this form, Mrs. White, feels that no reduplicative prefix is present in the word. If /léləč/ is actually an underlying form, it is not an exception to the morphophonemic solution, but, in fact, provides evidence in support of such a solution, i.e. only resonants in reduplicative prefixes are devoiced.

26 The resonant Devoicing Rule is formulated here in such a way that it does not appeal to the feature [+actual] in conditioning the rule. It merely states that resonants in reduplicative prefixes devoice. This accurately reflects the fact that resonants in Actual, Resultative, Plural, or Diminutive aspect prefixes are devoiced.

The specification assigned to /h/ in this rule uniquely defines that segment for Cowichan. However, in a universal grammar where a voiceless glottalized /y/ might occur the segment would have to be more closely defined to preclude the occurrence of any other segments but /h/.

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APPENDIX - DISTINCTIVE FEATURES

The utility and appropriateness of distinctive feature theory in describing a language is very succinctly summed up by Shane (1973:25).

"... features ideally fulfill three functions. (1) They are capable of describing the systematic phonetics-a phonetic function. (2) At the more abstract level they serve to differentiate lexical items-a phonemic function. (3) They define natural classes, that is, those segments which as a group undergo similar phonological processes."

It is primarily functions (2) and (3) which are germane to this thesis, but in a full grammar of Cowichan the first function would be equally as important as the latter two.

The distinctive features employed in this thesis follow those discussed by Chomsky and Halle (1968:302-29 and 354-5). Table IV presents the feature specifications for the contrastive segments of Cowichan.

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MORPHOPHONEMIC PROPERTIES OF

COWICHAN ACTUAL ASPECT

Author


MICHAEL KEVIN JONES

JULY 2, 1976
