# Formalising Stress in SENĆOŦEN

by

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## ABSTRACT

The purpose of this thesis is to contribute to our understanding of how stress is assigned in SENĆOŦEN (a dialect of North Straits Salish). The stress system of the Salish languages has been traditionally thought of as being highly morpho-lexical. Montler (1986: 23) states that in SENĆOŦEN, roots and affixes are lexically specified for their stress properties. He claims that these roots and affixes are in a hierarchical relationship and compete with each other for stress assignment. However, in this thesis, I show that there is much less morpho-lexical stress in SENĆOŦEN than previously thought. The stress pattern of a high number of polymorphemic words, namely those that contain lexical suffixes, can be accounted for without resorting to a morphological hierarchy of stress. Instead, using an Optimality Theory analysis inspired by the work of Dyck (2004) and Kiyota (2003), I show that it is the weight distinction between full vowels and schwa that determines where stress will be assigned. In addition, I am able to show that metrical feet are grouped into trochees and that these trochaic feet are aligned to the right edge of the word.

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# CHAPTER ONE
## Introduction

### 1.1 Introduction.

The central claim of this thesis is that stress in SENĆOŦEN lexical stems[1] is predictable. I formalise this claim using an Optimality Theory analysis, which draws upon a combination of constraints used by Dyck (2004), in her analysis of the stress system of S<u>k</u>w<u>x</u>wú7mesh (Squamish), and Kiyota (2003), in his analysis of plural allomorphy in SENĆOŦEN. I focus on three types of lexical stems in this analysis. The first are plain roots, the second are root and lexical suffix combinations, and the third are root and lexical suffix combinations with the addition of a grammatical morpheme. The inclusion of this grammatical morphology serves to illuminate the stress properties of the lexical suffixes in question.

I further contribute to our knowledge of SENĆOŦEN in three ways. 1) I examine the phonotactics which prevent certain consonant clusters from occurring. 2) I demonstrate that schwa is predictable in SENĆOŦEN. And 3) I am able to show that there are fewer cases of morphologically accented items in SENĆOŦEN than was previously thought.

To truly understand the entire stress system of SENĆOŦEN, it will be necessary to build on the work presented here and to examine forms which include more complex morphology, including transitivity morphology, person markers, reduplication in its various forms, particles and clitics. I will be pursuing this line of research in future papers. The analysis presented in this thesis provides a crucial foundation for a complete study of SENĆOŦEN stress.

1 Lexical stems consist of a root and lexical suffix.

At first glance, the data suggest that stress in SENĆOŦEN is unpredictable.

| | | | | | |
|---|---|---|---|---|---|
| (1) | a. | [v́ v] | SȻOTI | $sk^{w}$áti | *crazy* |
| | b. | [v v́] | TI,TOS | tiʔtás | *bucking tide* |
| | c. | [v́ ə] | SK̲ÁŁEX | sqɛ́ɬəx̌ | *clam fork* |
| | d. | [ə v́] | SK̲ELÁW, | sqəlɛ́w' | *beaver* |
| | e. | [ə́ v] | ŦEK̲I | θə́qi | *sockeye* |
| | f. | [ə́ ə] | K̲ELEX̲ | qə́ləx̌ | *salmon eggs* |

In words with two full vowels, stress can occur on either the first or the second full vowel. Words with a full vowel and schwa can have stress on either the full vowel or the schwa, while words with two schwas have stress on the first schwa.

With the exception of a few pages dedicated to the subject in Montler (1986: 23-27), only one work has been produced that proposes a formal analysis of stress in SENĆOŦEN. Kiyota (2003: 20-28) uses OT to account for the stress properties of the SENĆOŦEN plural. Both Montler (1986:23) and Kiyota (2003: 7) agree that stress has a tendency to be penultimate and a full vowel is stressed over a schwa. They also state that stress in SENĆOŦEN is morphologically complex, whereby roots and suffixes, both of which are lexically specified for stress, compete with one another for primary word stress. In this thesis, I support both Montler (1986:23) and Kiyota (2003: 7) in their first claim, that stress tends to be penultimate. However, my research does not support their second claim, that stress in SENĆOŦEN is a morphologically complex system. Instead, I argue that the stress pattern of SENĆOŦEN lexical stems is accounted for by assuming that left-headed binary feet are aligned to the right edge of a lexical stem and that SENĆOŦEN is sensitive to the phonological weight distinction between full vowel and schwa.

This chapter is organised as follows: in section 1.2, I situate the SENĆOŦEN within the larger Salish language family. In section 1.3, I present the phonemic inventory of the language. In section 1.4, I discuss previous literature about stress in the Salish languages. In section 1.5, I explain where the data for this thesis come from and how this data are being used. In section 1.6, I outline the main tenets of Optimality Theory, and in section 1.7, I provide an outline of the remainder of the thesis.

## 1.2 SENĆOŦEN

SENĆOŦEN is a dialect of North Straits, a Central Coast Salish language, spoken by the Saanich people, who live on the Saanich Peninsula and the surrounding Gulf and San-Juan Islands (Montler, 1986: 1, Elliott, 1983: 13). Other dialects of North Straits Salish are: Sooke, Songish, Samish, Semiahoo and Lummi. The Salish language family is comprised of 23 languages spoken throughout the Pacific Northwest. These languages are divided into five subdivisions (Czaykowska-Higgins and Kinkade 1998: 3).

(2) THE SALISH LANGUAGES (CZAYKOWSKA-HIGGINS & KINKADE 1998: 3)

| **Non-Indigenous name** | | **Indigenous name (phonetic)** | **Indigenous name (orthographic)** |
|---|---|---|---|
| I | Bella Coola | nuxalk | |
| II | Central Salish | | |
| | Comox | | |
| | Pentlatch | pənƛ̕áč | |
| | Sechelt | šášíšáɬəm | Shashishalhem |
| | Squamish | sqʷx̌ʷúʔməš | Sḵwx̱wú7mesh |
| | Halkomelem | | |
| | Northern Straits | | |
| | Klallam | nəxʷsƛ̕áy̓əm̓ucən | |
| | Nooksack | ɬə́čələsəm | |
| | Lushootseed | dxʷləšúcid | |
| | Twana | sqʷuqʷúʔbəšq | |
| III | Tsamosan | | |
| | Quinault | kʷínayɬ | |
| | Lower Chehalis | ɬəw̓áľməš | |
| | Upper Chehalis | q̓ʷay̓áyiɬq̓ | |
| | Cowlitz | sƛ̕púlmš | |
| IV | Tillamook | hutyéyu | |
| V | Interior Salish | | |
| | Lillooet | sƛ̕ǽƛ̕imxəč | St'át'imcets |
| | Thompson | nɬeʔkepmxcín | Nlaka'pamux |
| | Shuswap | səxwəpməxcín | Secwepemctsín |
| | Colville-Okanangan | nsilxcín | |
| | Columbian | nxaʔamxcín | |
| | Spokane-Kalispel-Flathead | | |
| | Coeur d'Alene | snčícuʔumšcn | Snchitsu'umshtsn |

The Salish language family covers an extensive geographical area in the Pacific Northwest. The areas include, southern British Columbia, Washington State, northern Idaho, western Montana and northwestern Oregon (see Czaykowska-Higgins and Kinkade 1998:2 for a detailed map). Pentlatch, Nooksack, Twana and Tillamook are no longer spoken. The remainder of the Salish languages are considered to be critically endangered. Of the six dialects of North Straits, only SENĆOŦEN and Samish are still spoken by fluent speakers. The number of speakers is unclear, but my consultants have suggested that about twenty five people speak SENĆOŦEN to varying degrees of fluency. All these speakers are over the age of 50. In some cases the languages do not have an indigenous name. These include Comox, Northern Straits, Halkomelem and Spokane-Kalispel-Flathead.[2] As I have explained above, SENĆOŦEN (sənčáθən) is a dialect of Northern Straits Salish.

## 1.3 Inventory of Sounds

As in the other Salish languages, the consonant inventory of SENĆOŦEN is extensive, with a total of 36 contrastive segments.

(3) SENĆOŦEN CONSONANT INVENTORY (ADAPTED FROM MONTLER 1986:7)[3]

| | Labial | Coronal | | | | Dorsal | | | | Glottal |
|---|---|---|---|---|---|---|---|---|---|---|
| | bilabial | dental | alveolar | lateral | post alveolar | dorsal | | uvular | | glottal |
| **Obstruents** | p P | | t T | | č Ć | (k) (C) | $k^w$ Ȼ | q K̲ | $q^w$ Ḱ | |
| | p̓ B | t̓$^{\theta}$ T̸ | t̓ D | ƛ̓ T̲ | č̓ J | | k̓$^w$ Q | q̓ K | q̓$^w$ Ꝁ | ʔ , |
| | | θ Ŧ | s S | ɬ Ł | š Ś | | $x^w$ W̲ | x̌ X | x̌$^w$ X̲ | h H |
| **Resonants** | m M | | n N | l L | y Y | ŋ N̲ | w W | | | |
| | m̓ M, | | n̓ N, | l̓ L, | y̓ Y, | ŋ' N̲, | w̓ W, | | | |

There are two orthographies used in (3). In 1981, Dave Elliott Sr, a Saanich Elder, developed his own orthography for SENĆOŦEN (Elliott 1983). In the right hand column of each cell is the Dave Elliott orthography and in the left hand column is the American Phonetic Alphabet.

The inventory of consonants in (3) is typical of the Salish languages. SENĆOŦEN has a series of voiceless obstruents and all the stops have ejective counterparts. There are no

2 The linguistic classifications do not reflect any overall political or social division. Each language contains dialects with their own indigenous names (Czaykowska-Higgins & Kinkade 1998:4).

3 I follow a convention in the Salish literature by using the Americanist phonetic alphabet. An appendix is included at the end of the thesis with the equivalent symbols from the International Phonetic Alphabet.

voiced obstruents in SENĆOŦEN. Many Salish languages do not distinguish between non-labial velar and palato-alveolar obstruents (Czaykowska-Higgins and Kinkade 1998:8-9). This is also true for SENĆOŦEN, as is attested by the presence of a non-labial palato-alveolar, but not a non-labial velar fricative. In his phonemic inventory, Montler (1986) includes the phoneme /k/ within the set of velar stops. However, he places it within parentheses as its occurrence in the lexicon is rare, and limited mostly to loanwords. As in the other Central Salish languages, the SENĆOŦEN consonant inventory lacks pharyngeals, retracted consonants, flaps or trills.

The resonant consonants in SENĆOŦEN are, for the most part, typical of the Salish languages. The segments found in the resonant series generally correspond in place of articulation to those in its obstruent series, and every resonant has a glottalised counterpart. Like other non-Interior Salishan languages, the SENĆOŦEN inventory lacks uvular resonants. However, SENĆOŦEN does have a velar resonant segment which is only present in Straits and Northern Straits Salish. This segment is a result of a historical change from /m/ to /ŋ/ (Kuipers 2002).

The vowel system, typical of the Salish languages, consists of four vowels and a schwa. In (4), I present only those sounds I consider to be phonemes. The Dave Elliott orthography also includes segments which are phonetic and those that are combinations of a vowel and a glide. These sounds are: A [ɛ], Ⱥ [ey], Í [əy].

(4) SENĆOŦEN VOWEL INVENTORY (ADAPTED FROM MONTLER (1986: 7)

| | **Front** | **Central** | **Back** |
|---|---|---|---|
| **High** | i I | | u U |
| **Mid** | e Á | (ə) (E) | |
| **Low** | | a O | |

In contrast to the extensive consonant inventory, SENĆOŦEN, like the majority of Salish languages, has a minimal vowel inventory. It consists of only four full vowels. / i, e, u, a/, and a schwa. Of the four full vowels of SENĆOŦEN, /u/ is found less frequently in the lexicon than either /i/, /e/ or /a/. As is the case with other Salish languages, /u/ tends to occur only in loanwords, or as a syllabic variant of /w/ (Czaykowska-Higgins and Kinkade 1998:10)

A number of Salishanists have investigated the status of schwa in Salish languages (see Kinkade 1998 on Salish languages in general; Carlson 1989 on Spokane; Czaykowska-Higgins 1993 and Czaykowska-Higgins & Willett 1997 on Moses-Columbian; Bianco 1995 and Urbanczyk 1996[2000] on Lushootseed; Bianco 1996 on Cowichan; Shaw et al 1999 on Musqueam; Blake 2000b on Sliammon; Dyck 2004 on Sk̲wx̲wú7mesh on Squamish). They all point to the conclusion that schwa is largely predictable in Salish. In many of the examples from Montler (1986), the assumption is made that the schwa is underlying, as in /-ət/ 'control transitive'. This thesis will contribute to the body of work surrounding schwa in Salish by providing an analysis of the properties of the SENĆOŦEN schwa, and presenting evidence in Chapter 2 that schwa is largely predictable in SENĆOŦEN, and is therefore not underlying.

## 1.4 The Study of Stress in Salish Languages

Czaykowska-Higgins & Kinkade (1998:15-17) report the presence of four basic types of stress systems in the Salish language family. The first type is a morphologically governed stress system. Roots and suffixes are considered to be accented and compete with each other for stress assignment. The Interior languages, with the exception of St'át'imcets (Lillooet), fall into this type. In these types of languages, primary stress tends to fall as far to the right as possible in a word, given the lexically specified stress properties of the component morphemes (see Czaykowska-Higgins 1993 on Moses Columbian; Bates & Carlson 1989 on Spokane; Thompson & Thompson 1992 on Thompson).

The second type of stress system is found in languages such as St'át'imcets (Lillooet) (see Roberts 1993; Roberts & Shaw 1994, Matthewson 1994; Van Eijk 1985) and S<u>k</u>w<u>x</u>wú7mesh (Squamish) (see Davis 1984; Demers & Horn 1978; Dyck 2004; Tamburri Watt 1999). These languages tend to assign primary stress to the penultimate syllable and are governed by weight restrictions and to a lesser extent by morphological restrictions.

The third type of stress system reported by Czaykowska-Higgins and Kinkade (1998) is found in Saanich. Who, following Montler (1986:23), say that primary stress in this language tends to be penultimate and subject to morphological stress properties, but not to weight restrictions. However, as I will show in the Chapter 3, the stress pattern of Saanich (SENĆOŦEN) roots suggests that the language patterns more closely with the second stress type. The stress pattern depends, to a great degree, on the weight difference between full vowels and schwa.

The fourth type of stress system is termed a fixed system. In Sliammon, primary stress always falls on the initial syllable (see Blake 2000b; Watanabe 2003) and in Northern Lushootseed, stress surfaces on the first, non prefixal, full vowel in the word. If all the syllables contain schwa, then the leftmost one will bear the stress (see Bianco 1995; Hess 1977; Urbanczyk 2000).

Czaykowska-Higgins & Kinkade (1998:14) discuss some general tendencies of the stress systems of Salish languages. First, they point out that for most of the languages there are three degrees of stress: primary, secondary and unstressed. Second, they report that secondary stress does not surface reliably and that most words only have a primary stress. It is unclear whether secondary stress is difficult to perceive, or if it has not been adequately noted by linguists. In my own fieldwork, I had difficulty perceiving secondary stress.[4]

Third, Czaykowska-Higgins & Kinkade (1998:14) say that the acoustic correlates of stress, for most of the Salish languages, are pitch and length. After conducting a brief phonetic analysis of stress in three words, I concluded that this was also the case in SENĆOŦEN. I found that intensity was not a reliable correlate of stress. This is because an unstressed schwa next to a resonant can have equal or higher intensity than a stressed vowel. For the example in (5a,b) the stressed vowel has higher values for pitch, length and intensity than the unstressed vowel. In (5c), however, the stressed vowel has higher values for pitch and length, but a lower value for intensity than the unstressed vowel. It is likely that the sonority difference between the plain and glottalised resonants in (5c) is responsible for the different levels of intensity present in the two syllables of this word.

4 In this thesis, I only deal with primary stress. I assume, following Kiyota (2003:9) that secondary stress is accounted for by iterative footing from the right edge of a word.

(5) a. ŦOŦEN θáθən *mouth*
b. SKOṈI, sq̓ʷáŋiʔ *head*
c. DEM,SEN t̓ə́m̓sən *He got hit on the head.*

In (6), I show the values for the acoustic correlates of stress, for both the stressed and the unstressed vowels in the examples in (5). To obtain these numbers, I analysed recordings of the SENĆOŦEN words in Praat. I highlighted the relevant syllable and used the query function to obtain the mean pitch, intensity and duration of each segment under study. From the findings of this brief analysis, I hypothesise that the stress correlates for SENĆOŦEN are likely pitch and length. The findings in (6) by no means constitute an extensive acoustic study of stress in SENĆOŦEN. I leave that kind of study for further research and refer the reader to other acoustic studies on Salish languages. These include Watt et al (2002) on Sḵwx̱ú7mesh (Squamish), and Caldecott (2006) on St'át'imcets (Lillooet).

(6) Acoustic correlates of stress

| θáθən (mouth) | á | ə |
|---|---|---|
| Intensity | 81 (Db) | 70 (Db) |
| Pitch | 88 (Hz) | 77 (Hz) |
| Length | 132 (ms) | 67 (ms) |
| sq̓ʷáŋiʔ (head) | á | i |
| Intensity | 88 (Db) | 81 (Db) |
| Pitch | 106 (Hz) | 85 (Hz) |
| Length | 147 (ms) | 76 (ms) |
| t̓ə́m̓sən (he got hit on the head) | ə́ | ə |
| Intensity | 89 (Db) | 90 (Db) |
| Pitch | 233 (Hz) | 115 (Hz) |
| Length | 89 (ms) | 71 (ms) |

Czaykowska-Higgins & Kinkade (1998) also point out that unstressed vowels in most Salish languages often reduce to schwa or are completely deleted (see Kinkade 1993, 1998). Along with Montler (1986), I found the same to be true of SENĆOŦEN. In most cases full vowels are reduced to schwa when unstressed. In some words an unstressed full vowel deletes. Usually this is only the case if the resulting cluster is allowed in the language. I will discuss this further in Chapter 2. For now, I provide an example to illustrate my point. In (7a) the word has a full vowel /i/. When this root is concatenated with a lexical suffix with a full vowel, it is the vowel in the root which is deleted. The form in (7b) is left with a word initial obstruent cluster, which is allowable in the language.

| | | | | |
|---|---|---|---|---|
| (7) a. | ȽIW̱ | ɬix$^w$ | *three* | (FN 2006) |
| b. | ȽW̱ÁȽ | ɬx$^w$eɬ | *three times* | (FN 2006) |

Another major property of stress discussed by Czaykowska-Higgins & Kinkade (1998:16) is the morphological hierarchy. They say that, traditionally, morphemes in many of the Salish languages have been divided into three classes: strong, variable and weak. The surface stress of a word depends upon the following morphological hierarchy: strong suffix >> strong root >> variable root >> variable suffix >> weak root >> weak suffix. Most early work on Salish stress appeals to this hierarchy when accounting for stress. Many Salishanists derive the stress rules by assuming that there is an interaction between phonologically motivated stress rules and constraints or features lexically-specified on morphemes (Czaykowska-Higgins 1998:16). In contrast, most of the data presented in this thesis can be accounted for simply by phonological constraints on stress. However, there is a subset of examples, such as the word in (7b) in which stress does not fall on the penultimate syllable. In contradiction to my central claim that stress is predictable, (7b) strongly suggests that some suffixes are lexically specified for stress and that there is some amount of morphologically governed stress present in SENĆOŦEN. However, in Chapter 4, I will discuss this example further, suggesting that the seeming unpredictability of stress assignment in this form is due to homophony avoidance.

Three recent works on stress in Salish languages are 1) Dyck (2004) on S<u>k</u>w<u>x</u>wú7mesh (Squamish), 2) Shaw et al (1999) on Musqueam and 3) Kiyota (2003) on SENĆOŦEN. All use Optimality Theory to account for stress in these Salish languages, illustrating that the stress systems of the languages build trochaic feet. Shaw et al (1999) and Dyck (2004) both deal with morphologically governed stress by assuming that some roots and lexical suffixes are lexically specified for stress. These types of morphemes are accounted for by appealing to faithfulness constraints. These constraints ensure that properties present in the input are also present in the output. In addition, Dyck (2004) and Shaw et al (1999) also point out that many of the perceived lexical properties of Musqueam and S<u>k</u>w<u>x</u>wú7mesh (Squamish) are actually due to the phonological distinction between a full vowel and schwa. Kiyota (2003), although following Montler's (1986) ideas that SENĆOŦEN stress is a morphologically complex, also demonstrates, through his stress analysis of the SENĆOŦEN plural, that the language is sensitive to the phonological distinction between full vowel and schwa.

All three scholars are able to use OT constraints to account for the weight distinction discussed above. Dyck (2004), Kiyota (2003) and Shaw et al (1999) use varying versions of the constraint Weight to Stress Principle (WSP) (Prince 1990). Kiyota (2003) also uses the constraint Max-μ.

WSP states that stress is attracted to heavy syllables. I found no evidence for a distinction between closed bimoraic and open monomoraic syllables in SENĆOŦEN, and therefore cannot conclude that stress in the language is attracted to bimoraic, heavy syllables as opposed to light monomoraic ones. However, it is understood by Salishanists that in Salish languages full vowels have a mora and thus have weight, but that schwa has no mora and is thus weightless, and stress in SENĆOŦEN clearly prefers full vowels over schwa. To account for this same fact in Squamish Dyck (2004: 91) uses a modified version of WSP, Weight to Stress Principle Prime (WSP'). This constraint states that if a syllable has any weight it should be stressed. Dyck (2004:91) uses this modified version because Squamish schwa-resonant sequences sometimes pattern phonologically with full vowels. In some cases a schwa-resonant sequence attracts stress from a full vowel, suggesting that they are of equal weight. In order to prevent full vowels from reducing when unstressed, Kiyota (2003:26) uses the constraint Max-μ. If an unstressed full vowel is reduced it will lose its mora in the output, thus violating this constraint.

In this thesis, I adopt both of these constraints. First, I follow Dyck (2004:91) in her decision to use WSP'. I use this constraint for two reasons. 1) it captures the fact that full vowels reduce to schwa when unstressed and 2) because there are words in SENĆOŦEN which strongly suggest that some schwa-resonant sequences and full vowels are equal in weight.[5] Second, I follow Kiyota (2003:25) by using Max-μ. This constraint ensures that a full vowel is not reduced in the output. Therefore, output candidates with a schwa followed

5 The form /k̓ʷn-naxʷ/ ⇒ k̓ʷə́nnəxʷ suggests that schwa followed by resonant weighs the same as a full vowel. I leave this for future research.

by a full vowel are penalised if they assign primary stress to the first schwa and reduce the second full vowel. Kiyota (2003:26), notes that full vowels reduce in SENĆOŦEN and says that Max-μ should be ranked low. He leaves this question for future research. In this thesis, I solve the conflict between the process of vowel reduction and the need for segments to retain their mora by ranking Max-μ below WSP′.

## 1.5 The Data

The examples in this thesis are drawn from a combination of sources. Some are from fieldwork conducted, from 2004-2006, with the help of Saanich Elders. Other examples are drawn from secondary sources, namely Montler (1986 and 1991). The translations which appear in quotation marks are taken directly from these sources. The examples from my own field notes will be indicated by FN and the year elicited. It is the wish of the Elders with whom I worked that they not be individually acknowledged for their help.

In what follows, I will also provide an interlinear gloss, as in (8), which includes the meaning of the root along with the function of the affixes. As mentioned earlier, there are two orthographies used in this thesis. The first line of each example uses the alphabet developed by Dave Elliott Sr, the second line uses the North American Phonetic Alphabet, the third line is the interlinear gloss and the fourth line is the translation. The source of the data is in parentheses to the right hand of the example.

(8) DEMSEN
t̓ə́m̓=sən
hit=LS(FOOT)
'He got hit on the foot' (FN 2006)

## 1.6 Optimality Theory

In this thesis, I use Optimality Theory (Prince & Smolensky 1993), also known as OT, to account for stress in SENĆOŦEN. OT is a theory of constraint interactions between universal violable markedness and faithfulness constraints, which are ranked differently in different languages. The OT model of a language consists of two mechanisms: a set of ranked constraints, and a generator GEN, which generates all logically possible candidates for output. The generator is unconstrained by markedness effects and only the constraint ranking will determine the winning output of a given input. Traditionally, there is a tension between faithfulness constraints, which prohibit changes from input to output, and markedness constraints, which penalise universally marked structures.

The interaction between markedness and faithfulness constraints is demonstrated in OT by means of tableaux. Below, I give a skeleton tableau to explain how this works. The constraints are listed in the top row of the tableau, and the input is in the top left corner. Constraints are listed in order of their ranking, with the highest ranked constraint(s) to the left. A thick solid line between constraints shows that they are ranked with respect to each other, while a thin line shows that they are not[6]. The candidates are listed in the leftmost column. Constraint violations are indicated by an asterisk. If the violation is fatal, causing the candidate to be ruled out, an exclamation mark is added to the asterisk.

In the tableau below, constraints 1 and 2 are not ranked with respect to each other, so while each candidate violates one of them, both are still potentially the optimal candidate. Constraint 3, which is ranked lower than 1 and 2, but higher than 4, is violated fatally by

6 Thick solid lines between two constraints indicate a crucial ranking, while a thin line indicates no crucial order. I depart from the traditional use of perforated lines because of a word processing incompatibility. The pointed hand identifies the winning candidate, while a sad face means that a candidate lost when it should have won. A bomb beside a candidate, indicates that a candidate has been incorrectly predicted as optimal. Shaded cells indicate that the violation of a constraint is irrelevant to the analysis because the candidate has already fatally violated a higher constraint. An asterisk indicates that a candidate has violated a constraint. An asterisk with an exclamation mark indicates that the candidate has fatally violated a constraint.

Candidate B, causing Candidate A to be the winner; this is shown by the pointing hand. Constraint 4 is violated by Candidate A, but this does not matter, because it is the only candidate left. All columns after the fatal violation are shaded, to show that the constraints below the fatal violation need not be considered.

| Input | Constraint 1 | Constraint 2 | Constraint 3 | Constraint 4 |
|---|---|---|---|---|
| ☞Candidate A | * | | | * |
| Candidate B | | * | *! | |

## 1.7 An Outline of the Thesis

The analysis in this thesis relies heavily on the idea that there is a difference between full vowels and schwa. Therefore it is useful to devote some space to a discussion of the status of schwa in SENĆOŦEN. To that end, in Chapter 2 I provide evidence to show that schwa is predictable by showing that there are a number of consonant cluster prohibitions present in the language and that schwa shows up to prevent such clusters from occurring. In chapter 3, I go on to examine stress in SENĆOŦEN roots, showing that the basic stress pattern in SENĆOŦEN roots is in fact predictable. Following Montler's (1986) initial observation, I am able to show that stress has a tendency to be penultimate and that stress is attracted to weight, that is stress is attracted to full vowels in preference to a schwa.

In chapter 4, I examine the stress pattern in words which have lexical suffixes. Previously the stress assignment for these kinds of words has been considered to be extremely complex. I will show that, for the most part, these types of words can be accounted for with the same analysis used in Chapter 3. I also discuss some apparently exceptional data. These forms bring up a number of possible phonological issues which could be examined in future research. These include the presence of layered derivational structure, coronal prohibitions, and excrescent schwas. In this chapter, I also briefly discuss some exceptions that are not accounted for by my analysis. However, I suggest that two of these forms may be instances of homophony avoidance.

Chapter 5 is a summary of the thesis and a discussion of the results and implications for future study. This thesis also includes four appendices. The first is a conversion chart, which compares the Dave Elliott Orthography, the Americanist Phonetic Alphabet and the International Phonetic Alphabet. The second and third appendices are mini language lesson examples that I thought may be useful for language learning in the future. The fourth appendix is a list of the words that were recorded and used in this thesis.

# CHAPTER TWO
## Schwa and Consonant clusters

### 2.1 Introduction

In this chapter, I demonstrate that schwa is predictable in SENĆOŦEN. In section 2.2, I provide a discussion of what others have said about schwa in the Salish languages. This section discusses the various sources of schwa as well as commenting on the difference between epenthetic schwa and excrescent schwa. I account for excrescent schwas by suggesting that they ease the articulation between two sounds which would otherwise be difficult to pronounce. However, having not carried out a phonetic study of excrescent schwas, I leave room for the possibility that the presence of these segments, in some of the examples found in this thesis, may in fact be a result of a non-SENĆOŦEN speaker's auditory perception when encountering unfamiliar consonant clusters. Whatever the source of these schwas, I maintain that they are not present in the phonological sense and play no role in the assignment of stress. In section 2.3, I show the types of consonant clusters that are present in SENĆOŦEN and the combinations of consonants that are prohibited from clustering. I demonstrate that epenthetic schwa occurs predictably in order to prevent illicit consonant clusters from occurring. Section 2.4 is a summary of the chapter.

### 2.2 Schwa

The phonemic status of schwa has been widely debated in the Salish literature (see Kinkade 1998 on Salish languages in general; Carlson 1989 on Spokane; Czaykowska-Higgins 1993 on Moses-Columbian; Bianco 1996 and Urbanczyk 1996 [2000] on Lushootseed; Bianco 1996 on Cowichan; Shaw et al 1999 on Musqueam; and Blake 2000b on Sliammon). All the research points to the conclusion that schwa is largely predictable in

Salish. Kinkade (1998) proposes that there are four sources for schwa in Salish languages. 1) it is derived; 2) it is a reduced vowel; 3) it is excrescent; or 4) it is epenthetic. Bianco (1996:70) notes that according to Kinkade (to appear [1998]), "derived" schwa alternates with the consonant [m]. This is only reported for Nxaʔamcín and Bianco (1996:70) does not find it relevant for Cowichan phonology. I also did not find this type of schwa to be relevant to the phonology of SENĆOŦEN. Bianco (1995:70) also acknowledges that schwas which derive from underlying full vowels are found in all Salish languages. This source of schwa is an unstressed full vowel. In (1), I provide an example from SENĆOŦEN. The underlying full vowel of the root reduces to schwa when unstressed.

(1) /t$^{\theta}$ek$^{w}$=iq$^{w}$-ŋ/ ⇒ t$^{\theta}$ək$^{w}$=íq$^{w}$-əŋ'
wash=(LS)HEAD-MID-[ACT]
'He,she, it is washing his,her,its hair.' (Montler 1986:85)

An excrescent schwa is an optional transitional vowel. It has been argued for most Salish languages that these segments show up between obstruents and resonants to ease articulation (see Bagemihl 1991:600; Bianco 1995:67; Czaykowska-Higgins & Willett 1997; Kinkade 1998; Matthewson 1996:5). These types of schwas are not considered to be phonological and the assumption is that they are phonetically shorter than epenthetic (phonological) schwas. However, although this assumption is testable, an acoustic analysis of SENĆOŦEN schwa is beyond the scope of this thesis. An acoustic analysis has been carried out for St'át'imcets by Shahin & Blake (2004), and I hope to carry out such a study for SENĆOŦEN in the future. Below in (2), I present an example of an optional excrescent schwa found in SENĆOŦEN.

(2) a qʷáy̓ -ə=čəp.[7]
dead-CONN=(LS)FIRE
'Ashes' (Montler 1986:73)

b. ȻOÍĆEP qʷáy̓=čəp
dead=(LS)FIRE
'Ashes' (FN 2006)

Montler (1986:73) reports the presence of a connector morpheme in the word for *ashes*, which suggests that the form in (2a) exhibits ante-penultimate stress. However, it is hard to say whether this schwa was in fact produced by the speaker or just perceived by the transcriber. In Leonard (2006:7), I propose that the form in (2a) in fact follows the default penultimate stress pattern of SENĆOŦEN. Instead of analysing the schwa as a connector, I argue that it is excrescent, surfacing only to ease articulation from the resonant to the affricate. The form in (2b) was offered by Saanich Elders as an alternate pronunciation.

An epenthetic schwa is always inserted into illicit clusters. Such schwas serve as the peaks of syllables and are considered to be phonological. These kinds of schwas are counted for stress and are themselves stressed when in the appropriate position in a word. The distinction between excrescent and epenthetic schwa is the distinction between phonetic and phonological. In this thesis, I am interested in Kinkade's (1998) last two sources of schwa. I argue that excrescent schwa optionally surfaces or perceived between licit consonants clusters with varying places of articulation or between non-tautosyllabic obstruents and resonants. Conversely, epenthetic schwa surfaces predictably as a strategy to prevent illicit consonant clusters from occurring.

In the next section, I demonstrate the predictability of schwa by presenting the types of licit and illicit consonant clusters present in SENĆOŦEN.

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7 I have chosen to use the Dave Elliott alphabet only when the spelling has been checked with a Saanich Elder.

## 2.3 Consonant Clusters in Roots

In the quest to discover if schwa is predictable, it is useful to look at root shapes which have consonant clusters and to compare them with roots that surface with a CəC shape. I have restricted my investigation to roots with only three consonants because it is difficult to ascertain if forms with more than three consonants are truly mono-morphemic. Forms with a greater complexity of both shape and meaning are addressed in Chapter 4. Using Montler's (1991) word list, which contains approximately 1927 words, I examined 174 three consonant roots, 157 of which I was fortunate enough to check with two Saanich Elders[8]. I tried to avoid any forms which I suspected had transitive morphology, as well as forms which looked as though they contained a lexical suffix. Below, I present the different shapes that these three-consonant roots can have and how many of each type occur. By doing this, I will be able to illustrate in the following sections, the types of consonant cluster restrictions present in SENĆOŦEN. I show that schwa is predictably surfacing to avoid these restrictions.

(3) SURFACE ROOT SHAPES IN SENĆOŦEN

| Surface Shape | Orthography | Phonetic | Gloss | Number |
|---|---|---|---|---|
| CVCəC | TÁK̲EȽ | téqəɬ | *spear grass* | 54 |
| CVCC | T̲ ÁK̲T | ƛ̓éqt | *long/tall* | 18 |
| CCVC | TK̲ÁP | tqép | *saltwater fish trap* | 15 |
| CəCVC | NEW,ÁS | nəw̓és | *put inside* | 30 |
| CCəC | KTEX | q̓təx̌ | *rattle* | 11 |
| CəCəC | K̲ ELEN̲ | qələŋ | *eye* | 39 |
| CəCC | EW,Q | ʔə́w̓k̓ʷ | *finish off* | 7 |

8 Due to time constraints and in the interests of not over-taxing the Saanich Elders, I only include in the thesis those forms which were checked and verified with the speakers.

### 2.3.1. Clusters Root Initially

In this section, my aim is to discover the types of restrictions on root initial clusters present in SENĆOŦEN. I show that schwas are predictably inserted between segments which are prohibited from occurring together in a cluster. I begin by laying out the permissible consonant clusters that are attested in the data. In (4), I provide a few examples of the clusters which surface root-initially in SENĆOŦEN. Strikingly, they all consist of two obstruents.

(4) ROOT INITIAL OBSTRUENT CLUSTERS

| OO Clusters | Orthography | Phonetic | English |
|---|---|---|---|
| STOP STOP | TḴÁP<br>KBOX̱<br>KTEX̱ | tqep<br>q̓p̓ax̌<br>q̓təx̌ | *saltwater fish trap*<br>*hazel nut*<br>*rattle* |
| STOP AFFRICATE | None Attested | | |
| AFFRICATE STOP | ĆQEN<br>ĆKEN, | čk̓ʷən<br>čq̓ən̓ | *catch a glimpse of*<br>*file* |
| STOP FRICATIVE | TSOS<br>PW̱ÁṈ<br>QSEĆ | tsas<br>pxʷeŋ<br>k̓ʷsəč | *poor*<br>*Forest Island*<br>*trout* |
| FRICATIVE STOP | ȽKIT<br>XTIT | ɬq̓it<br>x̌tit | *any clothes*<br>*make/build something* |
| AFFRICATE AFFRICATE | Ṯ ĆES | ƛ̓čes | *Discovery Island* |
| AFFRICATE FRICATIVE | T̸XIT<br>JSÁY<br>ĆȽET | t̓ᶿx̌it<br>č̓sey<br>čɬət | *pebbles*<br>*Douglas fir*<br>*thick layer* |
| FRICATIVE AFFRICATE | SĆOȽ | ščaɬ | *fire wood* |
| FRICATIVE FRICATIVE | XȽÁM,<br>W̱ŦIȽES | x̌ɬem̓<br>xʷθiɬəs | *watch*<br>*sidehill* |

The only obstruent-obstruent combination not present in the data involves a stop followed by an affricate. It is difficult to determine whether this is an accidental gap or a prohibition against this type of cluster in SENĆOŦEN. There is only one example each of clusters involving two affricates and those involving fricatives followed by affricates. However, I believe that these kinds of clusters are allowed in SENĆOŦEN, as they are present in polymorphemic words.

The types of obstruent clusters presented in (4) likely do not form complex onsets. There are two reasons to suppose this proposition: 1) in some cases the two obstruents do not share the same laryngeal features. It is commonly argued that, cross-linguistically, onset clusters agree in their laryngeal features. If they do not, as is the case with q̓təx̌ in (4), then the usual case is for the more marked segment, in this case an ejective, to follow the less marked segment, in this case a plain obstruent (see Urbanczyk 2000:115-18; Greenberg 1978; Lombardi 1991; and Lamontagne 1993 (cited in Czaykowska-Higgins & Willett 1997)). Examples such as q̓təx̌ do not follow this pattern. 2) the order of the segments often violates the SONORITY SEQUENCING PROFILE (see Selkirk 1984; Steriade 1982; Clements 1990; Kentowicz 1994; and Zec 1995), which states that the sonority of the onset should rise toward the peak. In (4), there are a number of examples where fricatives and affricates occur before a stop in a cluster. Fricatives and affricates are considered to be more sonorous than stops. These types of observations have been used as arguments against complex onsets in other Salish languages (for example Czaykowska-Higgins & Willett 1997: 393; Urbanczyk 2000:73).

There are four forms in Montler (1991) which are exceptional in that they have a schwa inserted between two obstruents that are expected to cluster (see (5)). The first example suggests a prohibition against a cluster involving a dental fricative and a uvular stop. The second and third examples suggest a prohibition against a cluster involving two segments which share the same place and laryngeal features. The fourth example involves a velar stop and a post-alveolar affricate.

| | | | | | |
|---|---|---|---|---|---|
| (5) | a. | *θq | ŦEḴI | θə́qi | *sockeye* |
| | b. | *q̓q̓ | KEKI, | q̓əq̓îʔ | *guts* |
| | c. | *qq | ḴEḴEṮ | qə́qəƛ̓ | *shadow* |
| | d. | *kʷč | ȻEĆIL, | kʷəčîl̓ | *morning* |

Each set of exceptions, described above, can be explained straightforwardly. First, example (a) is accounted for by assuming that an epenthetic schwa is breaking up a three consonant cluster. This explanation hinges on the idea that the last surface syllable is actually an underlying glide. I suggest that the underlying root is thus √ θqy, and an epenthetic schwa is inserted after the first two consonants to break up the three consonant cluster. I further suggest that schwas inserted before glides cannot be stressed, so another epenthetic schwa is inserted between the fricative and the stop which bears stress. I discuss the properties of glides in more detail in Chapter 3.

Second, the examples in (b) and (c) are accounted for by assuming that there is a prohibition against segments which share the same place and laryngeal features. In other words there is a prohibition against two identical segments root initially. An epenthetic schwa is inserted to prevent such a cluster. This schwa is counted for stress in example (b), but is not stressed because there is a full vowel present in the root. In (c) however, the epenthetic schwa is stressed because it is one of two schwas in the root and is in the penultimate position. The idea that there is a prohibition against obstruent clusters sharing the same laryngeal features is consistent with the obstruent morpheme structure constraint proposed for Nxaʔamcín by Bessell & Czaykowska-Higgins (1993:42), which states that if there is a root morpheme structure of the shape C(V)CX the first two consonants cannot share the same laryngeal features. Although this constraint cannot be directly applied to the examples in (5b,c), it strongly suggests a prohibition against obstruents sharing laryngeal features. SENĆOŦEN only has a prohibition against obstruents sharing the same laryngeal feature, if those obstruents also share the same place feature. In Lushootseed the Obligatory Contour Principle, which states that adjacent segments cannot both have the same features, blocks syncope in reduplication processes (Urbanczyk 1995: 520).

I suggest that the schwa in example (d) is an underlying full vowel. The word meaning *day* is [skʷéčəl] (Montler 1991:152). There is a persistent morpheme /i/ in SENĆOŦEN (Montler 1986:54), which may be present in the word meaning *tomorrow*. This morpheme bears stress and the full vowel [e] is reduced to schwa. Stress in SENĆOŦEN is trochaic, so we would expect that the full vowel [e] would bear stress and that the persistant morpheme would reduce to [ə]. However, if this were to happen, the resulting form [*kʷečəl] would too closely resemble the word for *day*. The reason that the underlying full vowel does not delete in [kʷəčil̓ ] is because it is needed to break up an illicit cluster. Recall that there are no stop-affricate clusters attested in (4).

In contrast to obstruents, resonants are not involved in consonant clustering root initially, even if their presence would conform to the SONORITY SEQUENCING PROFILE. [9] Instead, an epenthetic schwa surfaces to avoid such clusters. There are two reasons for assuming that these schwas are epenthetic rather than excrescent. First, these schwas are counted for stress

9 This was first pointed out by Montler (1989:101).

and second, there are no examples in the data of root initial clusters involving resonants and obstruents. The appearance of schwa in such sequences is not optional.

(6) ROOT INITIAL RESONANT OBSTRUENT CLUSTER PROHIBITIONS

| **R O Cluster prohibitions** | **Orthography** | **Phonetic** | **English** |
|---|---|---|---|
| RESONANT STOP | NEȻIM<br>NEḰÁY | *nkʷ nəkʷ́ɪm<br>* nqʷ nəqʷéy | *black*<br>*yellowish green* |
| STOP RESONANT | K̲ ELEX<br>QELEW, | * ql qə́ləx̌<br>* k̓ʷl k̓ʷə́ləw̓ | *salmon eggs*<br>*skin* |
| RESONANT AFFRICATE | MET̲ÁL<br>NEŦÁX̲ | * mƛ məƛ̓él<br>* nt̓ᶿ nət̓ᶿéxʷ | *pass out*<br>*once* |
| AFFRICATE RESONANT | JELEM<br>T̲ EWEN̲ | * č̓l č̓ə́ləm<br>* ƛ̓w ƛ̓ə́wəŋ | *eel grass*<br>*howl* |
| RESONANT FRICATIVE | N̲ ESEN,<br>WEXES | * ŋs ŋə́sən̓<br>* wx̌ wə́x̌əs | *louse*<br>*march* |
| FRICATIVE RESONANT | ŚELEĆ<br>XEYL, | * šl šə́ləč<br>* x̌l x̌əyl̓ | *world*<br>*lose, die* |
| RESONANT RESONANT | NEW,ÁS<br>LELEJ | *nw̓ nəw̓és<br>*ll lə́ləč̓ | *put inside*<br>*yellow* |

In summary, I have shown that roots with three consonants allow obstruent clustering root initially. To prevent prohibitions, such as segments with the same manner and place, and clusters which involve resonants, an epenthetic schwa surfaces. I have also suggested that when the articulators of two segments differ in place of articulation, such that one articulator is at the front of the mouth and the other at the back, an excrescent schwa surfaces during the transition. The root initial cluster prohibitions discussed above strongly suggest by extension that schwa is predictable in SENĆOŦEN. Similar findings have been obtained for other

Salish languages (see Bagemihl 1991; Bates & Carlson 1992; Blake 2000b; Bianco 1996; Czaykowska-Higgins & Willett 1997; Matthewson 1996; Shaw 2002 & Urbanczyk 2000). To further my claim that SENĆOŦEN schwa is predictable, I now turn to an investigation of consonant clustering root finally.

### 2.3.2 Clusters Root Finally

The clustering facts in root final position are more complex than they are for root initial position. Along with clustering of obstruents, combinations of stops and resonants are free to cluster in this position. However, with the exception of three examples, clusters root finally must follow the SONORITY SEQUENCING PROFILE. Examples of the types of clusters observed in Montler (1991) are presented in (7).

(7) OBSTRUENT CLUSTERS IN ROOT FINAL POSITION

| OO clusters | Orthography | Phonetic | English |
|---|---|---|---|
| STOP STOP | T̲ ÁK̲T<br>ŦIȻT | ƛ̓eqt<br>θikʷt | *long/tall*<br>*sea cucumber* |
| AFFRICATE STOP | None Attested | | |
| STOP AFFRICATE | None Attested | | |
| AFFRICATE AFFRICATE | None Attested | | |
| FRICATIVE STOP | IST<br>W̲IW̲Q | ʔist<br>xʷixʷk̓ʷ | *paddle*<br>*red flowering current* |
| STOP FRICATIVE | ŦOTX | θatx̌ | *halibut* |
| FRICATIVE AFFRICATE | None Attested | | |
| AFFRICATE FRICATIVE | ĆIĆX | čičx̌ | *cherry bark pitch* |
| FRICATIVE FRICATIVE | ÁSW̲ | ʔesxʷ | *seal* |

I do not consider clusters involving a stop and fricative, affricate and fricative or fricative and fricative to be legitimate clusters in SENĆOŦEN. The examples of these combinations in (7) are considered exceptional. In the three examples where clusters appear to involve a final fricative that fricative is only ever [xʷ] or [x̌]. I suggest that in these cases the last consonant constitutes the head of a syllable. I will discuss this idea further in Chapter 4. The usual case in SENĆOŦEN, is for clusters involving a final fricative to be separated by an epenthetic schwa. This is exemplified in (8)

| | | | |
|---|---|---|---|
| (8) | WEXES | wə́x̌əs | *March/frog* |
| | SḴÁȽEX | sq̓éɬəx̌ | *clam fork* |
| | PO,ȾES | páʔt̓ᶿəs | *cradle board* |
| | ȾIDES | t̓ᶿit̓əs | *front* |
| | W̱O,DEȽ | xʷáʔt̓əɬ | *Spieden Island* |

In contrast to root-initial position, clusters involving resonants can occur in root-final position. However, if there are two resonants in a root-final position they can only cluster if they follow the SONORITY SEQUENCING PROFILE .

(9) RESONANT CLUSTERS IN ROOT FINAL POSITION

| Resonant Clusters | Orthography | Phonetic | English |
|---|---|---|---|
| RESONANT STOP | E,WQ<br>MELḰ<br>HÁWT | ʔəw̓k̓ʷ<br>məlqʷ<br>hewt | *give out/ be all gone*<br>*uvular*<br>*rat* |
| STOP RESONANT | None Attested | | |
| RESONANT AFFRICATE | None Attested | | |
| AFFRICATE RESONANT | None Attested | | |
| RESONANT FRICATIVE | ĆIWX | čiwx̌ | *fall apart* |
| FRICATIVE RESONANT | None Attested | | |
| RESONANT RESONANT | W̱EYL, | xʷəyl̓ | *lose/die* |

I found no instances of resonant and affricate clusters. This maybe an accidental gap, or it may be that such clusters are prohibited because they do not decrease in sonority sufficiently. Another reason why affricates do not cluster in general may be to do with their rarity in the language. There are only three affricate segments in SENĆOŦEN.

There is one example attested in the data involving a cluster of a resonant followed by a fricative /čiwx̌/. I assume that the uvular fricative, in this case, forms its own syllable with the preceding consonant. The other three forms, found in the thesis, which have a resonant followed by a fricative root finally have an epenthetic schwa inserted between the two consonants. Notice that the fricatives are neither [xʷ] or [x̌].

| | | | | |
|---|---|---|---|---|
| (10) a. | ŚPOLES | špáləs | *pare/peel* | (FN 2006) |
| b. | ḰENES | qʷə́nəs | *whale* | (FN 2006) |
| c. | TOM,EL | tám̓əɬ | *warm water* | (FN 2006) |

The clearly viable clusters involving resonants are clusters involving a resonant followed by a stop, and a plain glide followed by a glottalised resonant. In other languages, such as Kwakw'ala (northern Wakashan), glottalised segments are considered to be less sonorous than plain resonants (Zec 1995). Therefore, a form like xʷəyl̓ does not violate the SONORITY SEQUENCING PROFILE.

There are three exceptions to the generalisation about root-final clusters. The last two segments in the forms in (11) do not violate the SONORITY SEQUENCING PROFILE. However, rather than form a cluster they are separated by an intervening schwa.

| | | | | | | |
|---|---|---|---|---|---|---|
| (11) | a. | * lq | W̱ÁLEḴ | xʷéləq | *almost* | (FN 2006) |
| | b. | * yq̓ | ŁEYEK | ɬə́yəq̓ | *shiner* | (FN 2006) |
| | c. | * nt | SṈÁNET | sŋénət | *mountain* | (FN 2006) |

As discussed earlier, I argue that there is no restriction on resonant and stop clusters occurring root finally. To account for examples like those in (11a,c) therefore, it is necessary to assume that the schwa surfacing between the two consonants is a transitional or excrescent schwa which is only audible because the tongue is moving from a coronal place of articulation to a dorsal place. However the example in (11b) is epenthetic as it is stressed. There appears to be a prohibition against adjacent resonant and obstruent coronal segments.

Following the SONORITY SEQUENCING PROFILE, clusters that rise in sonority away from the nucleus are expected to be prohibited. For the most part this is the case in SENĆOŦEN. The data in (12) show that in root final position, SENĆOŦEN is sensitive to the sonority difference between obstruents, where affricates are more sonorous than stops.

(12) RISING SONORITY CLUSTER PROHIBITIONS IN ROOT FINAL POSITION

| ***Rising Sonority*** | ***Orthography*** | ***Phonetic*** | ***English*** |
|---|---|---|---|
| STOP AFFRICATE | Ḵ EḴET<br>SETEJ | * qƛ̓ qəqəƛ̓<br>* tč' sətəč' | *shadow*<br>*world* |
| STOP FRICATIVE | X̸IDES<br>TÁḴEŁ | * t̓s tᶿit̓əs<br>* qɬ teqəɬ | *waterfront*<br>*spear grass* |
| STOP RESONANT | TÁȻEL<br>KÁKEN | * kʷl tekʷəl<br>* qn qeqən | *cross over the water*<br>*house post* |
| AFFRICATE FRICATIVE | Ṉ EX̸EŁ | * tᶿɬ ŋətᶿəɬ | *pus* |
| AFFRICATE RESONANT | TÁĆEL | * čl tečəl | *arrive* |
| FRICATIVE RESONANT | Ṉ ESEN,<br>ŦIŁEṈ | * sn̓ ŋəsən̓<br>* ɬŋ θiɬəŋ | *louse*<br>*stand* |

### 2.3.3 Clusters with Glottal Stop

I found no instances where a glottal stop was involved in clustering in either root-initial or root-final position. Glottal stop is usually considered an obstruent. Given this, we would expect roots such as ʔəšəs *sealion* to allow clustering in root initial position.

However, this is not the case. The example x̌ačəʔ *lake* also suggests that glottal stop is not patterning with the obstruents. If it were, then we would expect the root final cluster *čʔ. In terms of phonotactics then, SENĆOŦEN glottal stop behaves more like a sonorant segment.

## 2.4 Chapter Summary

In summary, I have presented the allowable consonant clusters found in SENĆOŦEN in an effort to show that schwa is predictable in the language. This is shown in (13).

(13) CLUSTER TYPES IN SENĆOŦEN

| Initial | Attested | Illicit | Final | Attested | Illicit |
|---|---|---|---|---|---|
| | STOP STOP | STOP AFFRICATE | | STOP STOP | STOP AFFRICATE |
| | STOP FRICATIVE | STOP RESONANT | | | STOP FRICATIVE |
| | AFFRICATE FRICATIVE | AFFRICATE RESONANT | | | STOP RESONANT |
| | AFFRICATE AFFRICATE | FRICATIVE RESONANT | | | AFFRICATE STOP |
| | AFFRICATE FRICATIVE | RESONANT STOP | | | AFFRICATE AFFRICATE |
| | FRICATIVE STOP | RESONANT AFFRICATE | | | AFFRICATE FRICATIVE |
| | FRICATIVE AFFRICATE | RESONANT FRICATIVE | | | AFFRICATE RESONANT |
| | FRICATIVE FRICATIVE | RESONANT RESONANT | | FRICATIVE STOP | FRICATIVE AFFRICATE |
| | | OBSTURENT GLOTTAL | | | FRICATIVE FRICATIVE |
| | | GLOTTAL OBSTRUENT | | | FRICATIVE RESONANT |
| | | RESONANT GLOTTAL | | RESONANT STOP | RESONANT AFFRICATE |
| | | GLOTTAL RESONANT | | RESONANT RESONANT[10] | RESONANT FRICATIVE |
| | | | | | RESONANT RESONANT[11] |
| | | | | | OBSTRUENT GLOTTAL |
| | | | | | GLOTTAL OBSTRUENT |
| | | | | | RESONANT GLOTTAL |
| | | | | | GLOTTAL RESONANT |

For the most part, I expect a schwa to be inserted any time two consonants would otherwise

10 Only if there is a decrease in sonority. This means a plain resonant followed by a glottalised resonant.
11 This includes two plain resonants or two glottalised resonants.

form an illicit cluster. The next chapter is a discussion of stress assignment in SENĆOŦEN roots.

# CHAPTER THREE
## Stress in SENĆOŦEN roots

### 3.1 Introduction

In this chapter, I provide a formal analysis of stress in SENĆOŦEN disyllabic roots. Drawing on the work of Dyck (2004) and Kiyota (2003), I am able to verify Montler's (1986:23) observation that stress in SENĆOŦEN has a tendency to be penultimate. Following Montler (1986:23), who says that stress will fall on the first full vowel in the word, I further support the claim that the language is sensitive to the weight distinction between a full vowel and a schwa. Section 3.2, begins with an illustration of the possible stress patterns found in SENĆOŦEN. In section 3.3, I provide a formal account of stress in SENĆOŦEN disyllabic roots, with 3.3.1 being an account of stress in disyllabic roots with two full vowels, 3.3.2 an account of stress in disyllabic roots which have a full vowel and a schwa, and section 3.3.3 presenting an account of disyllabic words with two schwas. Finally, a short summary of the chapter is given in section 3.4.

### 3.2 Observed Stress Pattern for Disyllabic Roots

The data in (1) illustrate the possible surface stress patterns found in SENĆOŦEN disyllabic roots.

| | | | | | |
|---|---|---|---|---|---|
| (1) | a. | [v́ v] | SȻOTI | sk$^{w}$áti | *crazy* |
| | b. | [v v́] | TI,TOS | tiʔtás | *bucking tide* |
| | c. | [v́ ə] | SPÁ,EŦ | spéʔəθ | *bear* |
| | d. | [ə v́] | SK̲ELÁW, | sqəléw’ | *beaver* |
| | e. | [ə́ v] | ŦEKI | θə́qi | *sockeye* |
| | f. | [ə́ ə] | K̲ELEX̲ | qə́ləx̌ | *salmon eggs* |

At first glance, stress appears to be unpredictable in SENĆOŦEN. In words with two full vowels, stress can fall on the penultimate or the final syllable. For words with a full vowel and schwa, stress can fall either on the full vowel or the schwa. Examples like those in (1) might suggest that the stress pattern of SENĆOŦEN is random. However, in section 3.3, I will show that the default stress pattern in SENĆOŦEN is in fact predictable. I will demonstrate that the language prefers to build left-headed binary feet and that stress is sensitive to the weight distinction between a full vowel and a schwa. The gaps [ə ə́] and [v ə́] are shown to be predictable when the following analysis is taken into consideration.

## 3.3 Stress in Disyllabic Roots

In this section, I will present a formal analysis of stress in SENĆOŦEN disyllabic roots, focussing, in section 3.3.1, on disyllabic roots with two full vowels, in section 3.3.2, on disyllabic roots with a full vowel and a schwa, and in section 3.3.3, on disyllabic roots which surface with two schwas.

### 3.3.1 Disyllabic Roots with Two Full Vowels

Recall that the list of examples in (1) suggested that SENĆOŦEN stress is unpredictable. In this section, I examine disyllabic roots with two full vowels, showing that, despite initial appearances, the stress in these forms is in fact predictable. The default stress pattern of these kinds of roots suggests that syllables are parsed into left headed feet. A sample of disyllabic roots containing two full vowels is given in (2). These roots are further catergorised: in (a) stress falls on the penultimate and in (b) stress falls on the final syllable.

(2)a STRESS ON THE PENULTIMATE SYLLABLE.

| | | |
|---|---|---|
| SȻOTI | skʷáti | *crazy* |
| SꝀON̲I, | sq'ʷáŋiʔ | *head* |
| JÁ,WI, | č'éw̓iʔ | *dish* |
| KÁ,N̲I, | q̓éŋiʔ | *girl* |

b STRESS ON THE FINAL SYLLABLE

| | | |
|---|---|---|
| TI,TOS | tiʔtás | *bucking tide* |
| SX̱I,ÁM, | sx̌ʷiʔém̓[12] | *mythical story* |

The data in (2a) illustrate that syllables are parsed into binary feet. These feet are stressed on the leftmost syllable and are thus trochaic at the syllabic level. This observation can be formalised by appealing to the following OT constraints (Prince & Smolensky 1993; McCarthy & Prince 1993):

| | | |
|---|---|---|
| (3) | FT-BIN σ | Feet are binary at the syllabic level |
| (4) | HEAD L | Feet are left headed at the syllabic level |
| (5) | PARSE σ | Syllables are parsed by metrical feet |

The first constraint, FT-BIN σ, requires that feet are binary at the syllabic level. This means that each metrical foot should contain two syllables. This constraint ensures that a root such as sqʷáŋiʔ 'head' is parsed as (sqʷá . ŋiʔ ) not as * (sqʷá) (ŋí ʔ)[13]. In natural languages there are two types of possible foot forms. The first is called trochaic, where feet are stressed on the leftmost syllable, and the second is termed iambic, where stress is on the rightmost syllable. Feet in SENĆOŦEN are trochaic as opposed to iambic. This foot type is captured by the OT constraint HEAD L. Both trochaic feet and iambic feet are illustrated in (6)[14].

(6)


12 Interestingly, when there are two full vowels in a SENĆOŦEN disyllabic root one is always an /i/. I suggest that unstressed [i] is always the result of an unstressed [ə] next to a glide and is always weightless.

13 The brackets indicate foot boundaries.

14 syllable =σ, strong= s, weak=w

The constraints discussed so far do not need to be crucially ranked. This is because the optimal candidate is the only form that does not violate any of the constraints. This is illustrated in (7).

(7) skʷáti 'crazy'

| skʷati | HEAD L | FT -BIN σ | PARSE σ |
|---|---|---|---|
| ☞ a. s(kʷáti) | | | |
| b. s(kʷatí) | *! | | |
| c. skʷa(tí) | | *! | * |

In (7), candidate (a) wins because it does not violate any of the constraints. Candidate (b) loses because it violates HEAD L. Candidate (c) does not violate HEAD L; instead it loses because it violates FT-BIN σ.

The data in (2b), repeated here in (8), exhibit surface stress on the second syllable.

(8) TI,TOS tiʔtás *bucking tide* SX̱I,ÁM, sx̌ʷiʔém̓ *mythical story*

These forms have apparent iambic stress and thus present themselves as exceptions. However, notice that the first vowel in both is an [i] followed by [ʔ]. I assume that the first full vowel is in fact a schwa which has taken on the features of the following glottalised glide. I transcribed the sound as [i] because that is the sound that I perceived when listening to the speakers. It would be useful in the future to carry out an acoustic study of this [i] sound and the [i] which patterns as a full vowel in the phonology. This is a study I intend to pursue in the future. Montler (1986:30) says that glides become full vowels between two consonants and at the end of a word. He also says that glides surface as a full vowel plus glottal stop when following a consonant. Montler (1986: 30) offers two examples which argue for the vocalisation of palatal glides in SENĆOŦEN. These have been checked by Saanich Elders and are presented below in (9).

(9) a. EY, [15]
ʔəẙ
'good' (FN 2006)

b. I,ÁNȻES
ʔiʔ=énkʷəs
good=LS(STOMACH)
'brave' (FN 2006)

c. ĆÁY
čey
'he works' (FN 2006)

d. ĆÁYĆI
čey-či
RED-work
'diligent' (FN 2006)

The form in (9b) is built from the root meaning *good* and a lexical suffix meaning *brave*. Montler (1986: 30) proposes that the root loses its schwa and the glide vocalises when concatenated to a suffix. However, I have argued that schwa is predictable in SENĆOŦEN, thus the underlying structure of this word is as follows:

(10) a. /√ʔẙ=enkʷs/
good=stomach

To get to the surface representation, a schwa is inserted to prevent illicit clusters, both in the root and the suffix. The inserted schwa in the root takes on the features of the following glide and the glottalisation is realised as a consonant, yielding the following surface representation:

b. [ʔiʔ=énkʷəs]

15 *ʔiʔ never surfaces as the form for 'good'. It may be the case that only unstressed schwas can take on the features of glides. I leave this for future research.

In example (9d) the root *he works* has undergone the process of reduplication giving us the form čeyčey. The unstressed syllable is reduced to schwa which in turn takes on the features of the following glide, leaving us with the form [čéyči].

The data in (2b) is repeated here in (11) along with the underlying representations. I suggest that an epenthetic schwa is inserted to prevent an illicit cluster. This schwa then takes on the features of the glide and the glottalisation is realised as a consonant.

| | | | |
|---|---|---|---|
| (11)a. | tiʔtás | *bucking tide* | /t̓y̓tas/ |
| b. | sx̌ʷiʔém̓ | *mythical story* | /sx̌ʷy̓em̓/ |

As stated earlier, only the full vowels in the language have weight and are considered to have a mora underlyingly. Schwas, even if they take on the features of a glide, are not considered to have weight. Thus, in (11) stress is attracted to the only segment in the root that has weight. To formalise this observation, I appeal to three constraints, two used by Kiyota (2003: 20-28), and one by Dyck (2004:91). To ensure that full vowels do not reduce in the output, Kiyota (2003:25) uses the constraint Max-μ. This faithfulness constraint requires that moras present in the input should be present in the output.

(12) Max-μ Every mora in the input is present in the output

(Kiyota 2003:25)

To capture the idea that schwas which take on the features of adjacent glides are weightless, I adopt Dep-μ. This faithfulness constraint prohibits the presence of a mora in the output if there is none present in the input.

(13) Dep-μ Every mora in the output should be present in the input

(Kiyota 2003:26)

Lastly, I use the constraint WSP′. Dyck (2004:91) uses this constraint to ensure that a vowel that has weight is stressed. I use this constraint to ensure that all full vowels which are not stressed on the surface reduce to schwa.

(14) WSP′ If weight then stressed (Dyck 2004:91)

These three constraints are ranked above FT BIN σ. It is more crucial that a vowel with weight be stressed than it is to have a well formed foot.

(15) tiʔ.tás 'bucking tide'

| μ<br>tẏtas [16] | WSP′ | MAX-μ | DEP-μ | HEAD L | FT-BIN σ | PARSE σ |
|---|---|---|---|---|---|---|
| μ<br>☞ a.tiʔ. (tás) | | | | | * | * |
| b.(tíʔ. təs) | | *! | | | | |
| μ<br>c.(tiʔ. tás) | | | | *! | | |
| μ μ<br>d.(tíʔ. tas) | *! | | * | | | |

I assume that there is a high ranking constraint ensuring that a schwa is inserted in the root to break up an illicit cluster. Candidate (a) wins because it does not violate any of the higher ranking constraints. Candidate (b) loses because it violates MAX-μ, candidate (c) loses because it has an iambic foot thus violating HEAD L, and candidate (d) is ruled out because it does not stress the syllable with weight.

### 3.3.2 Disyllabic Roots with Full Vowel and Schwa

In this section, I examine disyllabic roots containing a full vowel and a schwa. In order to do this I need to establish the correct representation for schwa. Earlier, I showed that

16 I assume that the candidate tẏtás is ruled out by a high ranking constraint that disallows three consonants word initially.

schwa is predictable, serving to break up an illicit consonant cluster. It is overlooked in most cases of stress assignment in the sense that, if there is a schwa and full vowel in a root, stress will fall on the full vowel even if this results in a violation of the regular stress pattern. Along with Dyck (2004), Kager (1990), Kiyota (2003) and Shaw et al (1999), I suggest that these kinds of facts can be explained by assuming that full vowels have moraic structure, while schwas do not. I alluded to this type of representation in my discussion of epenthetic schwas, which took on the features of glides while remaining weightless.

(16) REPRESENTATION OF FULL VOWEL AND SCHWA (Shaw et al 1999:5)

| | a. full vowel | b. schwa | c. reduced schwa |
|---|---|---|---|
| Nucleus | Nuc | Nuc | Nuc |
| | \| | | ≠ |
| Moraic weight | μ | | μ |
| | \| | | \| |
| Root node | o | | o |
| | \| | | \| |
| Features | [f] | | [f] |

Because schwa is weightless and a full vowel has weight, the current constraint ranking predicts that stress will fall on a full vowel in preference to a schwa.[17] This is true for all the examples except those in (17aii), below, which will be dealt with in (19).

The examples in (17a) exhibit penultimate stress. Those in (17ai) have stress on a full vowel and those in (17aii) have stress on a schwa. The data in (17b) have stress on a full vowel, but differ from the examples in (17a) because they exhibit an iambic stress pattern. The examples in (17b) illustrate, again, that stress is attracted to syllables with weight.

17 Following Shaw et al (1999), I assume that schwas have no place features. I leave an acoustic analysis of this property of schwa for future research. It is because the schwa has no place features of its own that it is able to take on the place features of glides.

(17)a STRESS ON THE PENULTIMATE SYLLABLE

| | | | | |
|---|---|---|---|---|
| i | SḴÁŁEX | sqéɬəx̌ | *clam fork* | (FN 2006) |
| | SPÁ,W̱EṈ, | spéʔxʷəŋʼ | misty | (FN 2006) |
| | SṈÁNET | sŋénət | *mountain* | (FN 2006) |
| | TÁJEḴ | téčʼəq | *angry* | (FN 2006) |
| | SPÁ,EŦ | spéʔəθ | *bear* | (FN 2006) |
| ii | ŦEḴI | θə́qi | *sockeye* | (FN 2006) |
| | | pə́wiʔ | *flounder* | (Montler 1991: 261) |

b STRESS ON THE FINAL SYLLABLE

| | | | |
|---|---|---|---|
| SḴELÁW, | sqəléw̓ | *beaver* | (FN 2006) |
| SENI, | sənîʔ | *Oregon grape berry* | (FN 2006) |
| EN,OX̱ | ʔənʔáx̌ʷ | *bring over* | (FN 2006) |
| ĆELÁL | čəlél | *almost* | (FN 2006) |
| ĆELIM | čəlĭm | *even so* | (FN 2006) |

In mixed disyllabic roots with a syllable containing a full vowel followed by one with a schwa, stress is always attracted to the syllable with a full vowel. There are two reasons for this: 1) the penultimate syllable has weight and 2) the syllable is in the correct position for trochaic footing. The stress pattern of the examples in (17a) is formalised in (18) using previously introduced constraints. In (18), the winning candidate is (a); it is the only candidate that does not violate any of the constraints. The constraint MAX-μ ensures that candidate (b) is disqualified. The need for feet to be binary eliminates candidate (c) from the competition. Candidate (d) loses because a syllable with weight is unstressed.

(18) sqéɬəx̌ 'clam fork'

| μ<br>sqeɬəx̌[18] | WSP′ | MAX- μ | DEP-μ | HEAD L | FT-BIN σ | PARSE σ |
|---|---|---|---|---|---|---|
| μ<br>☞ a. s(qé. ɬəx̌) | | | | | | |
| b. s(qə. ɬə́x̌) | | *! | | * | | |
| μ<br>c. s(qé). ɬəx̌ | | | | | *! | * |
| μ<br>d. s(qe. ɬə́x̌) | *! | | | * | | |

At first glance the data in (17aii) look as though they are exceptions to the current analysis. They conform to HEAD L, but appear to stress a weightless syllable over a weighted one. However, as argued above, the final syllable in these examples actually consists of a schwa followed by a glide. The schwa has taken on the features of the glide, but does not have a mora. The two surface syllables are both equally weightless. Syllables of equal weight always have stress on the leftmost syllable of a binary foot. In (19), we can see that candidate (b) is disqualified for violating DEP-μ, and candidate (c) is out because it exhibits iambic footing thus violating HEAD L. The optimal candidate is (a).

18 I have included schwa in the input and assume that there is a high ranking constraint which disallows these kinds of clusters. [ə] is not underlying in this example. The kinds of constraints needed to account for the different types of consonant cluster prohibitions discussed in Chapter 2 still need to be worked out.

(19) θə́qi 'sockeye'

| θəqy | WSP′ | MAX-μ | DEP-μ | HEAD L | FT-BIN σ | PARSE σ |
|---|---|---|---|---|---|---|
| ☞ a. (θə́. qi) [19] | | | | | | |
| μ<br>b. θə. (qî) | | | *! | | | |
| c. (θə. qî) | | | | *! | | |

The data in (17b) show that if there is only one syllable with an underlying full vowel in the root, it is that syllable which attracts stress. Stressing a syllable with weight is more important than having trochaic feet. Candidate (a) is the optimal candidate even though this candidate does not have a left-headed binary foot. Candidate (b) is ruled out because it violates MAX-μ and candidate (c) is excluded because it violates HEAD L. Candidate (d) loses because an unstressed full vowel failed to reduce to schwa.

(20) sqə.léw̓ 'beaver'

| μ<br>sqəlew̓[20] | WSP′ | MAX-μ | DEP-μ | HEAD L | FT-BIN σ | PARSE σ |
|---|---|---|---|---|---|---|
| μ<br>☞ a. sqə. (léw̓) | | | | | * | * |
| b. (sqə́. ləw̓) | | *! | | | | |
| μ<br>c. (sqə. léw) | | | | *! | | |
| μ<br>d. (sqə́. lew̓) | *! | | | | | |

19 I assume that the candidate (θqy) loses because of a high ranking constraint against illicit consonant clusters.

20 Again, schwa is included in the input for space considerations and also because the cluster constraints need to be worked out. Schwa is not underlying in these examples.

### 3.3.3 Disyllabic Roots with Two Schwas

Disyllabic roots with two schwas always stress the penultimate syllable. This is expected because these kinds of roots have syllables which are equally weightless. Feet with syllables that are equal in regards to weight are always left-headed.

(21) STRESS ON THE PENULTIMATE SYLLABLE

| | | | |
|---|---|---|---|
| TE̱NEW̱ | tə́ŋəxʷ | *earth* | (FN 2006) |
| ḴELEX | qə́ləx̌ | *salmon eggs* | (FN 2006) |
| QELEW, | k̓ʷə́ləw̓ | *skin* | (FN 2006) |
| LEȻEX | lə́kʷəx̌ | *rib* | (FN 2006) |
| LELEJ | lə́ləč̓ | *yellow* | (FN 2006) |

The data in (21) are formalised in (22). Candidate (a) is optimal because it does not violate any of the constraints and conforms to HEAD L.

(22) lə́ləč̓ 'yellow'

| lələč̓[21] | WSP′ | MAX-μ | DEP-μ | HEAD L | FT-BIN σ | PARSE σ |
|---|---|---|---|---|---|---|
| ☞ a. (lə́. ləč̓) | | | | | | |
| b. (lə. lə́č̓) | | | | *! | | |

## 3.4 Chapter summary

In this chapter I have provided a formal analysis of stress in SENĆOŦEN disyllabic roots. First, I presented data showing that at first glance, SENĆOŦEN stress appears to be unpredictable. Drawing on the work of Dyck (2004) and Kiyota (2003), I showed that disyllabic roots in SENĆOŦEN are parsed into left-headed binary feet, unless there is a discrepancy in regards to syllable weight. If a syllable has weight, it will bear stress over a

21 The underlying representation for this form is /llč̓/. As discussed in previous foot notes schwas that are in the input are there because the constraints for consonants clusters needs to be worked out. From this point on any schwa that is in the input is there for that reason. I argue that schwa is predictable in SENĆOŦEN and is therefore not underlying.

syllable that does not, regardless of foot form requirements. The ranking needed to predict stress in SENĆOŦEN disyllabic roots is as follows:

WSP′, MAX- $\mu$, DEP-$\mu$, HEAD L >> FT-BIN $\sigma$, PARSE $\sigma$.

In the next chapter, I will formalise the stress of SENĆOŦEN polymorphemic words using the analysis from this chapter as a starting point.

# CHAPTER FOUR
## Stress and lexical suffixes.

### 4.1 Introduction

In this chapter, I examine lexical stems that include a lexical suffix. I claim that most of the stress properties previously analysed as morpho-lexical in SENĆOŦEN are actually stressed phonologically and are completely predictable. There is a small number of cases where stress cannot be predicted. I provide a brief discussion about these forms at the end of the chapter.

Using the analysis of stressed roots presented in Chapter 3, I am able to account for the stress pattern of the majority of root plus lexical suffix combinations found in Montler (1986:65-91). Words which include lexical suffixes exhibit the same basic penultimate stress pattern found for roots. They can be accounted for by assuming that binary feet are left headed, and that stress is sensitive to the weight distinction between full vowels and schwa. In addition, a complete account of these types of words requires that binary feet be aligned to the right edge of the word.

The organisation of this chapter is as follows: in this section, I provide a definition of the term lexical suffix and provide an overview of how this type of morpheme has been treated in the Salish literature. In section 4.2, I discuss the stress properties of words containing roots and lexical suffixes, first looking at lexical suffixes with a full vowel, and then focusing on those which have no underlying vowel. In section 4.3, I discuss examples that appear to be exceptions to the proposed stress pattern. In section 4.4, I give a brief discussion of truly exceptional forms and in section 4.5, I provide a summary of the chapter.

### 4.1.1 Definition and Overview of Lexical Suffixes.

According to Montler (1986:64), "Lexical Suffixes are derivational morphemes with substantive root-like meanings". These morphemes always occur bound to a root. SENĆOŦEN also has free forms with meanings similar to those of some of these lexical suffixes, but these words often do not resemble the lexical suffixes in form. Some examples are given in (1) and (2), where a free form example is presented alongside an example of a word that contains a lexical suffix with the same meaning. The '=' indicates the concatenation of the lexical suffix.

(1) a. MÁ,ȻEȽ LÁ,E TŦE SKO̱NI,
méʔkʷəɬ léʔə tᶿə sq̓ʷaŋiʔ
hurt PART DET head)[22]
'hurt on the head' (FN 2004)

b. DEM,IḰ
t̓əm̓=íqʷ
hit=LS(HEAD
'He got hit on the head.' (FN 2004)

(2) a. SÁLES
seləs
'hand' (FN 2004)

b. ȽQÁSES
ɬk̓ʷ-é=səs
snag-CONN=LS(HAND)
'He got hooked on the hand' (Montler 1986:86)

### 4.1.2 Study of Lexical Suffixes in SENĆOŦEN

The first work on SENĆOŦEN is Pidgeon (1970:19-49), a Master's thesis entitled *Lexical Suffixes in Saanich: Dialect of Straits Coast Salish*, which provides a grammatical

22 CML=CONTROL MIDDLE; LS=LEXICAL SUFFIX; CONN=CONNECTOR; CTR=CONTROL TRANSITIVE; ACT=ACTUAL; INSTR=INSTRUMENTAL; 1SUBJ=1ST PERSON SUBJECT; 1OBJ=1ST PERSON OBJECT; PART=PARTICLE;

sketch listing and exemplifying forty-three SENĆOŦEN lexical suffixes. Montler (1986:64-91), in his *Morphology and Phonology of Saanich, North Straits Salish*, lists and exemplifies fifty-eight lexical suffixes. Montler (1991) also includes lexical suffixes in his word list for Saanich. Another source for lexical suffixes, occurring specifically in place names, is Elliott (1983). Both Pidgeon (1970) and Montler (1986) provide a discussion of stress in their works. They both notice that stress tends to fall on the penultimate syllable. In addition Montler (1986: 23) claims that stress is a highly complicated matter, and that it is necessary to distinguish classes of morphemes based on how they participate in stress assignment. He says that roots and suffixes compete for primary stress when concatenated in a word and the stronger of the two wins out. Montler (1986: 23) recognises three types of roots: strong, weak, and vowelless. He also recognises four types of suffixes, strong, ambivalent[23], weak and vowelless. Below I present the hierarchy referred to in Montler (1986: 23).

(3) MORPHOLOGICAL STRESS HIERARCHY FOR SAANICH ( based on Montler, 1986:23)[24]

StgSfx >> StgRt >> AmbSfx >> WkRt >> WkSfx >> VlRt >> UnstrSfx

Kiyota (2003:7) agrees with Montler (1986: 23) that stress is morphologically complex in SENĆOŦEN. However, in this thesis, I argue that it is the phonological properties of roots and suffixes which determine their stress properties. For example, the quality of the vowel and the placement of a morpheme in the word are both factors which affect stress placement in SENĆOŦEN. As mentioned in Chapter 1, there may in fact be some morpho-lexical stress present in SENĆOŦEN, which I will discuss in section 4.4. However, I argue in this thesis that the amount of morpho-lexical stress present in the language is far less than previously

23 This is Montler's term for the variable morphemes referred to in Chapter 1. This type of morpheme is considered to lose stress to a strong morpheme but to attract stress from a weak morpheme.

24 Stg=strong, Amb=ambivalent, Wk=weak, Vl=vowelless, Unstr=Unstressed, Sfx=suffix and Rt=Root.

thought.

For the other dialects of North Straits, various morphological and phonological sketches, including lists of lexical suffixes, have been produced; these include: *A Grammar of Non-particles in Sooke, a Dialect of North Straits Salish* (Efrat, 1969); *A Phonology and Morphology of Songish, a Dialect of Straits Salish* (Raffo, 1970); *A Phonology, Morphology and Classified Word List for the Samish Dialect of Straits Salish* (Galloway, 1970).

### 4.1.3 The Broader Study of Lexical Suffixes in the Salish Language Family.

Lexical suffixes are found throughout the Salish language family (Kinkade 1998b: 266). These morphemes have lexical content and thus seem similar to roots, but their meanings are much more restricted (usually they only refer to body-parts, environmental concepts, cultural objects and human terms) than meanings of true roots (or stems based on roots). In this last sense they are similar to affixes. These contradictions in their properties have been widely debated by Salishanists (Czaykowska-Higgins, 2004: 91). Some focus on their historical origins (Kinkade 1998a; Egesdal 1981; Mattina 1987; Carlson 1990), some on the types of meanings that they express (Hinkson 1999, 2002; Hinkson & Norwood 1997; Gerdts & Hinkson 1994, 1996, 2003) and others on the role that they play in sentence structure (Gerdts 1995, 1998, 2000, 2004; Czaykowska-Higgins, Bart & Willett 1996; Willett 2003). Preliminary investigations into the phonological and morphological properties of lexical suffixes have been undertaken for Musqueam, the downriver dialect of Halkomelem (Shaw et al 1999; Shaw 2001, 2002a,), Lushootseed [a Coast Salish language] (Urbanczyk 2006), Lillooet [an Interior Salish language] (Blake 1998, 2000a), and Moses-Columbian [an Interior Salish language] (Czaykowska-Higgins 2004).

A number of different terms have been used to describe lexical suffixes. Kinkade

(1998) explains that Sapir called them "verbal affixes that refer to nouns" (Sapir 1911:251). He says that Reichard called them "nominal suffixes" (Reichard 1938:601) and that Vogt used the term "field suffixes" (Vogt 1940:58). He also cites Kinkade (1967:125) as the first to use the term "lexical suffixes", which he borrowed from Vogt, who had used the term to describe a "group of suffixes which modify the verb, by changing its syntactical functions or by adding various shades of meaning, as iteration, reciprocity, reflexivity etc" (Vogt 1940:56). The term lexical suffix is now used to describe the morphemes examined in this chapter.

## 4.2 Roots, Lexical Suffixes and Stress

In this section, I will examine the stress pattern of words which combine a root with a lexical suffix. Drawing from the examples listed in Montler (1986:65-91), I will show that the vast majority, over 70% of words of this type, can be accounted for with the analysis presented in Chapter 3. In section 4.2.1, I examine lexical suffixes with full vowels and in 4.2.2, I examine vowelless lexical suffixes.

### 4.2.1 Lexical Suffixes With Full Vowels

In examining combinations of roots and lexical suffixes which contain full vowels, I first look at monosyllabic lexical suffixes and then turn to the disyllabic ones.

#### 4.2.1.1 Monosyllabic Lexical Suffixes with One Full Vowel

In (4), I provide a list of monosyllabic lexical suffixes with a full vowel.

(4) LEXICAL SUFFIXES WITH ONE FULL VOWEL

| Lexical suffix | Meaning | Lexical suffix | Meaning |
|---|---|---|---|
| =wiɬ | canoe | =en | ear |
| =k$^{w}$at | clothing | =neč | tail |
| =aɬ | offspring | =ɬnel | throat |
| =eɬ | times | =as | face |
| =iq$^{w}$ | head | =sis | hand |
| | | =ey̓ | wood |

Out of 67 words containing such suffixes found in Montler (1986), 49 (73%) conform to the basic stress pattern outlined in the previous chapter. When full vowel monosyllabic lexical suffixes concatenate with a root that has a full vowel, the root is stressed. This is to be expected as the two syllables are of equal weight and form a trochaic foot. Some examples are shown in (5).

(5)a. W̱ṮEḴTNEĆ x$^{w}$-ƛ̓ə́qt=nəč[25] /x$^{w}$-√ƛ̓eqt=neč/ (FN 2006)
LOC-long=LS(TAIL)
'Cougar'

b. W̱NÁJES x$^{w}$-néč̓=əs /x$^{w}$-√neč̓=as/ (FN 2006)
LOC-different=LS(FACE)
He looks different'

The constraints which decide the optimal candidate are HEAD L and WSP′. Candidate (a) wins because it does not violate these constraints. As shown in Chapter 3, disyllabic words with two full vowels always stress the first full vowel. This is because the language prefers to

25 After careful review of the recording of this word, it is clear that the first vowel sounds like a schwa: however, it is stressed. This segment may in fact be a slightly lowered /e/. This lowering may be caused by the adjacent uvular segment. I assume that this segment has retained its mora.

parse syllables into left-headed binary feet. To ensure that unstressed full vowels reduce to schwa it is necessary to rank WSP′ above MAX-μ.

(6) xʷ-ƛ̓éqt=neč 'cougar'[26]

| μ μ xʷ-ƛ̓eqt=neč | WSP′ | MAX-μ | DEP-μ | HEAD L | FT-BIN σ | PARSE σ |
|---|---|---|---|---|---|---|
| μ ☞ a. xʷ-(ƛ̓ə́qt. nəč) | | * | | | | |
| μ b. xʷ-(ƛ̓əqt. néč) | | * | | *! | | |
| μ μ c. xʷ-(ƛ̓éqt=neč) | *! | | | | | |

When full vowel monosyllabic lexical suffixes concatenate with a vowelless root the lexical suffix bears the stress, as shown in (7).

(7) a. ṈEN,ÁȽ ŋən̓=éɬ /√ŋn̓=eɬ/ (FN 2006)
many=LS(TIMES)
'Lots of times.'

b. ȽKÁN ɬq̓=en /√ɬq̓=en/ (FN 2006)
one of a pair=LS(EAR)
'One of a pair of earrings.'

c. DEM,IḰ t̓əm̓=íqʷ /√t̓m̓=iqʷ/ (FN 2004)
hit=LS(HEAD)
'He got hit on the head.'

d. ȻEŦNÁĆT kʷəθ=néč-t /√kʷθ=neč-t/ (FN 2006)
tilt=LS(TAIL)-CTR
'He tilted it'

The lexical suffix bears the stress because it contains the only full vowel in the word. As

26 I propose that a highly ranked constraint such as STRESS CLASH would prevent a candidate like (ƛ̓ə́qt)(néč).

discussed in Chapter 3, stress in SENĆOŦEN is attracted to syllables with weight. The constraints at issue are MAX-μ, WSP′ and HEAD-L. In (8), Candidate (a) wins because it does not violate these constraints while candidate (b) loses because it violates MAX-μ. Candidate (c) is eliminated because it violates HEAD L. Candidate (d) is penalized for not reducing an unstressed full vowel. The fact that candidate (a) wins illustrates that it is more important to stress a full vowel than to maintain a well-formed foot structure.

(8) t̓əm̓=íqʷ 'he got hit on the head'

| μ<br>t̓əm̓=iqʷ | WSP′ | MAX-μ | DEP-μ | HEAD L | FT-BIN σ | PARSE σ |
|---|---|---|---|---|---|---|
| μ<br>a. t̓ə. (m̓íqʷ) | | | | | * | * |
| b. (t̓ə́. m̓əqʷ) | | *! | | | | |
| μ<br>c. (t̓ə. m̓íqʷ) | | | | *! | | |
| μ<br>d (t̓ə́. miqʷ) | *! | | | | | |

In words which end in a full vowel monosyllabic lexical suffix and a monosyllabic grammatical suffix, stress falls on the lexical suffix, as in examples (9a-c). This is because the lexical suffix and the grammatical suffix constitute a left-headed binary foot. In words which have a full vowel root, stress is still attracted to the lexical suffix, as in example (9c). This is because left-headed binary feet are aligned to the right edge of the word.

(9) a. ȽEḴSISTEN̲ ɬəq̓ʷ=sís-t-əŋ /√ɬq̓ʷ=sis-t-ŋ/ (FN 2006)
slap=LS(HAND)-CTR-MID
'He got slapped in the hand'

b. ŚW̱ḴENOSEṈ    š-xʷ-k̓ʷən=ás-əŋ    /š-xʷ-√k̓ʷn=as-ŋ/    (FN 2006)
s-LOC-see=LS(FACE)-MID
'Mirror, window'

c. T̸EȻIḰEṈ    t̓ᶿəkʷ=íqʷ=əŋ    /√ t̓ᶿekʷ=iqʷ-ŋ/    (FN 2006)
wash=LS(HEAD)-MID
'She's cleaning her hair.'

In order to formally account for the data in (9), I need to introduce another constraint which ensures that left-headed binary feet are aligned from the right edge of the word. This constraint is called ALIGN R and is defined in (10). In order to account for the data in (9) this constraint is ranked above MAX-μ.

(10) Align-R    Align (Wd,R, Ft, R). The right edge of every word coincides with the right edge of some foot

The relevant constraints for this competition are ALIGN-R, MAX-μ and WSP′. In (11), candidate (a) wins. Candidate (b) loses because it violates ALIGN-R and candidate (c) loses because it violates MAX-μ twice. Candidate (d) is eliminated due to the fact that it has an unstressed full vowel in the output.

(11) t$^{θ}$ək$^{w}$=íq$^{w}$=əŋ’ 'She's washing her hair.'

| μ μ<br>t$^{θ}$ek$^{w}$=iq$^{w}$=əŋ-[ACT] | ALIGN-R | WSP′ | MAX-μ | DEP-μ | HEAD L | FT BIN σ | PARSE σ |
|---|---|---|---|---|---|---|---|
| μ<br>☞ a.t$^{θ}$ə. (k$^{w}$í. q$^{w}$əŋ’) | | | * | | | | * |
| μ<br>b.(t$^{θ}$é. k$^{w}$ə). q$^{w}$=əŋ’ | *! | | * | | | | * |
| μ<br>c. t$^{θ}$ə. (k$^{w}$ə. q$^{w}$éŋ’) | | | * *! | | * | | * |
| μ μ<br>d. t$^{θ}$e. (k$^{w}$í. q$^{w}$əŋ) | | *! | | | | | * |

#### 4.2.1.2 Disyllabic Lexical Suffixes with Two Full Vowels.

There are only four lexical suffixes reported in Montler (1986) that contain two full vowels. There are two reasons to suppose that these lexical suffixes have two underlying full vowels: 1) Montler (1986) presents them in phonemic slashes and 2) both vowels surface as full when stressed. Of the 27 example words that make use of these lexical suffixes, 22 (81%) conform to the stress analysis under discussion. In (12), I present the four lexical suffixes.

(12) LEXICAL SUFFIXES WITH TWO FULL VOWELS

| **Lexical suffix** | **Meaning** |
|---|---|
| =alas | eye |
| =aθin | mouth |
| =ew̓eč | bottom |
| =eleq | wave |

When concatenated to a root with a full vowel, it is the lexical suffix which bears stress, as shown in (13). This is consistent with the analysis that left-headed binary feet are aligned with the rightmost edge of a word.

| | | | | |
|---|---|---|---|---|
| (13)a. | ṮÁḴTOLES | ƛ̓əqt=áləs<br>long=LS(EYE)<br>'Oblong' | /√ƛ̓eqt=alas/ | (FN 2006) |
| b. | NEJOLES | nəč̓=áləs<br>different=LS(EYE)<br>'Multicoloured' | /√neč̓=alas/ | (FN 2006) |
| c. | SȾEM,OŦEN | s-t̓ᶿəm̓=áθən<br>s-bone=LS(MOUTH)<br>'Jaw' | /s-√t̓ᶿam̓=aθin/ | (FN 2006) |

In (14) candidate (a) wins because it violates the fewest number of constraints. Candidate (b) loses because it violates ALIGN-R and candidate (c) is disqualified because it violates HEAD L. Candidate (d) fails to reduce two full vowels to schwas.

(14) ƛ̓əqt=áləs 'oblong'

| μ μ μ<br>ƛ̓eqt=alas | ALIGN-R | WSP′ | MAX-μ | DEP-μ | HEAD L | FT BIN σ | PARSE σ |
|---|---|---|---|---|---|---|---|
| μ<br>☞ a. ƛ̓əq. (tá. ləs) | | | * * | | | | * |
| μ<br>b. (ƛ̓éq. tə). ləs | *! | | * * | | | | * |
| μ<br>c. ƛ̓əq. (tə. lás) | | | * * | | *! | | * |
| μ μ μ<br>d. ƛ̓eq(t=álas) | | **! | | | | | * |

When a full vowel disyllabic lexical suffix is concatenated to a vowelless root, it is the first syllable of the lexical suffix that is predicted to take primary stress.

| | | | |
|---|---|---|---|
| (15) a. DEM,OŦEN | t̓əm̓=áθən<br>hit=LS(MOUTH)<br>'He got hit on the mouth.' | /√t̓m̓=aθin/ | (FN 2006) |
| b. LEXOLES | ləx̌=áləs<br>loose=LS(EYE)<br>'Loose weave' | /√lx̌=alas/ | (FN 2006) |
| c. T̲X̸OLES | ƛ̓t^θ=áləs<br>tight=LS(EYE)<br>'Tight weave' | /√ƛ̓t^θ=alas/ | (FN 2006) |

In (16) candidate (a) wins. Candidate (b) loses because it violates HEAD L. Candidate (c) is eliminated because a left-headed foot is aligned with the left edge of the word. Candidate (d) loses because it violates WSP′.

(16) ləx̌=áləs 'pare/peel'

| μ μ<br>lx̌=alas | ALIGN R | WSP′ | MAX-μ | DEP-μ | HEAD L | FT BIN σ | PARSE σ |
|---|---|---|---|---|---|---|---|
| μ<br>☞ a. lə(x̌á. ləs) | | | * | | | | * |
| μ<br>b. lə(x̌ə. lás) | | | * | | *! | | |
| c.(lə́. x̌ə). ləs | *! | | * * | | | | * |
| μ μ<br>d. lə(x̌=álas) | | *! | | | | | * |

Stress shifts to the second syllable of a full vowel disyllabic lexical suffix when it concatenates with another suffix that surfaces with one syllable. Again, this is expected if we assume that left-headed binary feet are aligned from the right edge of the word. Some examples are provided in (17).

(17)a. ȻEXŦINEṈ    kʷəx̌=θín-əŋ [27]    /√kʷx̌=aθin-ŋ/    (FN 2006)
tell=LS(MOUTH)-MID
'He's screaming

b. ŁEPXELOSEṈ    ɬəpx̌=əlás-əŋ    /√ɬpx̌=alas-ŋ/    (FN 2006)
blink =LS(EYE)-MID
'He blinked'

c. EXŦINEṈ SEN    ʔəx̌=θín-əŋ sən    /√ʔx̌=aθin-ŋ sn/    (FN 2006)
scrape=LS(MOUTH)-MID 1POSS
'I shaved'

d.    š-t̓ᶿəʔ=əwéč-ən    /š- t̓ᶿeʔ=eweč-n/    (Montler 1986: 89)
s-upon=LS(BOTTOM)-LS(INST)
'Chair'

The examples which include the lexical suffix for *mouth* exhibit vowel syncope. I offer here a hypothesis for the vowel deletion: first, the vowel reduces because it is unstressed and second, it deletes because the two consonants on either side have no prohibition against clustering. The examples (b) and (d) do not involve vowel syncope. This is because the two consonants either side of the vowel do not form an allowable cluster.[28]

As discussed earlier, left-headed binary feet are built from the right edge, this is why in (18), candidates (b) and (c) lose. Candidate (d) loses because it violates MAX-μ twice. Candidate (e) is disqualified for its failure to stress a full vowel.

---

27 It is also possible that the /i/ is the persistent suffix which occurs with some imperfectives.

28 This is a slight simplification of the facts. There are some examples such as xʷ-t̓ᶿəkʷ=sə́ń-əŋ' *she's washing her hair.*, which do not delete the schwa. There are two possible explanations, 1) the schwa remains because the word is an imperfective form or 2) the schwa is breaking up a three consonant cluster. I leave this for future research.

(18) kʷəx̌=θín-əŋ 'He's screaming'

| μ μ<br>kʷəx̌=aθin-əŋ | ALIGN-R | WSP′ | MAX-μ | DEP-μ | HEAD L | FT BIN σ | PARSE σ |
|---|---|---|---|---|---|---|---|
| μ<br>☞ a. kʷəx̌. (θí. n-əŋ) | | | * | | | | * |
| b.(kʷə́x̌. θə). nəŋ | *! | | * | | | | * |
| μ<br>c. kʷə(x̌ː á. θə). n-əŋ | *! | | * | | | | * * |
| d. kʷəx̌. (θə. nə́ŋ) | | | **! | | * | | * |
| μ μ<br>e. kʷə. x̌a. (θí. nəŋ) | | *! | | | | | ** |

### 4.2.1.3 Disyllabic Lexical Suffixes with One Full Vowel

Montler (1986) reports 13 lexical suffixes which surface with two syllables but that contain only one full vowel.

(19) DISYLLABIC LEXICAL SUFFIXES WITH ONE FULL VOWEL

| Lexical Suffix | Meaning | Lexical Suffix | Meaning |
|---|---|---|---|
| =ečən | waist | =eyəč | leg |
| =ečsəŋ | neck | =alən | fish |
| =iwəs | body | =amət | blanket |
| =eləʔ | container | =eɬsə | water |
| =əwič | back | =inəs | chest |
| =enkʷəs | stomach | =iqən | belly |
| | | =aw̓əqʷ | bundle |

From the 48 examples, which contain lexical suffixes in Montler (1986), 43 (89.5%) can be accounted for with the analysis used above. When concatenated to a root with a full vowel these suffixes are stressed, as shown in (20).

| | | | |
|---|---|---|---|
| (20)a. QSIȻES | k̓ʷs=íkʷəs<br>singe=LS(BODY)<br>'He singed (the hairs off) the hide' | /√k̓ʷes=iws/[29] | (FN 2006) |
| b. ṈESOMET | ŋəs=ámət<br>four=LS(BLANKET)<br>'Four blankets | /√ŋas=amt/ | (FN 2006) |
| c. SȾEM,INES | s-t̓ᶿəm̓=ínəs<br>s-bone=LS(CHEST)<br>'Sternum' | /s-√t̓ᶿam̓=ins/ | (FN 2006) |

This type of stress pattern is consistent with the analysis outlined so far. The lexical suffixes form a trochaic foot which is aligned to the right edge of the word. In this competition, candidate (a) wins. Candidate (b) is eliminated because it violates ALIGN-R and (c) is disqualified because it violates MAX-μ twice. Candidate (d) has an unstressed full vowel and so violates WSP′. Candidate (e) illustrates that is more optimal to delete the unstressed full vowel because when the schwa is present it incurs a violation of PARSE-σ.

29 Montler (1986:75) says that the /w/ in this lexical suffix always surfaces as [kʷ] unless it is glottalised by the 'actual'. A schwa is inserted to prevent the word final illicit cluster kʷs from surfacing.

(21) k̓ʷs=îkʷəs 'He singed (the hairs off) the hide.

| μ μ<br>k̓ʷes=ikʷəs | ALIGN-R | WSP′ | MAX-μ | DEP-μ | HEAD L | FT BIN σ | PARSE σ |
|---|---|---|---|---|---|---|---|
| μ<br>☞ a. k̓ʷ(sî. kʷəs) | | | * | | | | |
| μ<br>b. (k̓ʷé. sə). kʷəs | *! | | * | | | | * |
| c. k̓ʷ(sə. kʷə́s) | | | * *! | | * | | |
| μ μ<br>d. k̓ʷe(s=î kʷəs) | | *! | | | | | * |
| e. k̓ʷə(s=î kʷəs) | | | * | | | | *! |

As predicted, when concatenated with a vowelless root these kinds of lexical suffixes still attract stress. This is illustrated in (22).

(22) a. ĆḴIḴEN    čq=îqən    /√čq=iqn/    (FN 2006)
big=belly
'He is big bellied.'

b. DEM,IḴEN SEN    t̓əm̓=îqən    sən    /√t̓m̓=iqn/    (FN 2006)
hit=belly    1subj
'I got hit on the belly.'

c. ŁĆIȻES SEN    ɬč=îkʷəs    sən    /√ɬč=iws/    (FN 2006)
tired=body    1subj
'I am tired'

d. TȻÁĆSEN̲    tkʷ=éčsəŋ    /√tkʷ=ečsŋ/    (FN 2006)
break=neck
'He broke his neck.'

In (23), candidate (a) wins because it only violates the lowest ranking constraint. Candidates (b) and (e) are eliminated due to a violation of MAX-μ and candidate (c) and (d) are excluded for their violation of ALIGN R.

(23) xʷ-t̓əm̓=íqən 'get hit on the belly'

| μ<br>xʷ-t̓əm̓=iqən | ALIGN-R | WSP′ | MAX-μ | DEP-μ | HEAD L | FT BIN σ | PARSE σ |
|---|---|---|---|---|---|---|---|
| μ<br>☞ a. xʷ. t̓ə. (m̓í. qən) | | | | | | | * |
| b.xʷ. t̓ə(. m̓ə. qə́n) | | | *! | | * | | * |
| c. xʷ. (t̓ə́. m̓ə). qən | *! | | * | | | | * |
| μ<br>d. xʷ-(t̓ə́. m̓i). qən | *! | * | | | | | * |
| e. xʷ. t̓ə(. m̓ə́. qən) | | | *! | | | | * |

Before moving on to lexical suffixes with no full vowel, it is necessary to note that there are three lexical suffixes with only one vowel which pattern for stress purposes with the disyllabic lexical suffixes. Like the disyllabic lexical suffixes, these suffixes are always stressed when concatenated to a root, even if the root contains a full vowel.

(24) LEXICAL SUFFIXES WITH ONE VOWEL WHICH PATTERN WITH DISYLLABIC LEXICAL SUFFIXES

| **Lexical Suffix** | **Meaning** |
|---|---|
| =ew̓txʷ | building |
| =iɬč | plant |
| =ɬšeʔ | tens |

(25) gives examples of full vowel roots with one of these three suffixes.

(25)a. SOW̱EŁÁUTW̱ saxʷəɬ=éw̓txʷ /saxʷɬ=ew̓txʷ/ (FN 2006)
grass=LS(BUILDING)
'Barn'

| | | | | |
|---|---|---|---|---|
| b. | ṈESŁŚÁ, | ŋəs=ɬšéʔ<br>four=LS(TENS)<br>'Forty' | /ŋas=ɬšeʔ/ | (FN 2006) |
| c. | SṈESIŁĆ | s-ŋəs=íɬč<br>four=LS(PLANT)<br>'Four trees' | /s-ŋas=iɬč/ | (FN 2006) |

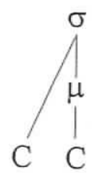
The suffixes are also always stressed when concatenated with a vowelless root as in (26).

| | | | | |
|---|---|---|---|---|
| (26)a. | ĆEḴÁU,TW̱ | čəq=éw̓txʷ<br>big=LS(BUILDING)<br>'Long house' | /čq=ew̓txʷ/ | (FN 2006) |
| b. | ŁḴEĆSŁŚÁ, | ɬqə=čs=ɬšéʔ [30]<br>five=LS(TENS)<br>'Fifty' | /ɬq=čs=ɬšeʔ/ | (FN 2006) |
| c. | ĆEṈ,IŁĆ | čəŋ'=íɬč<br>adze=LS(PLANT)<br>'Oak tree' | /čŋ'=iɬč/ | (FN 2006) |

Out of 15 occurrences of these types of lexical suffixes, 14 (93%) of them can be predicted if it is posited that the lexical suffixes themselves constitute a trochaic foot. This assumes that the lexical suffixes in (26) are made up of two syllables. Other Salishanists, namely Roberts (1993) and Shaw (1993), have proposed similar analyses. Roberts (1993), Roberts & Shaw 1994) and Caldecott (2006a) show that consonant clusters in St'at'imcets count as syllables for stress assignment. Shaw (1993: 121) proposes that consonant clusters constitute their own syllable and that they have the following representation:

30 I assume that the lexical suffix ɬšeʔ contains two syllables. Shaw (2002) glosses the lexical suffix for *tens*, in Musqueam (Central Salish), in the following way: =əɬ=cye (=times=tens). I assume that the lexical suffix that Montler (1986) reports as *tens* for SENĆOŦEN is built in a similar way from the lexical suffixes /=eɬ/ *times* and /=šeʔ/ *tens*. Unfortunately, this still does not explain why the lexical suffix for *tens* is able to attract stress from the lexical suffix *times*. According to the analysis thus far, the two lexical suffixes should form a trochaic foot aligned to the right edge of the word and stress should fall on the lexical suffix /=eɬ/. The only way to account for the stress properties of this lexical suffix is to assume that the two lexical suffixes became fused. I assume that this lexical suffix is lexically specified as stress attracting.

(27) NON-NUCLEAR SYLLABLE




For the lexical suffixes *building* and *plant*, I assume that the segments /tx$^w$/ and /ɬč/ are counted as syllables and that they have the structure given in (27). Because this is the last syllable in the word, a trochaic foot is built with the preceding syllable. Further evidence that /tx$^w$/ is a syllable can be found when looking at the lexical suffix meaning *round object/dollar* . Montler (1986:87) gives the underlying representation for this lexical suffix as /=ətx$^w$/. The following examples at first glance suggest that the lexical suffix contains one syllable with a schwa as its peak.

(28)[31] a. ŋəs–él=ətx$^w$ — /√ŋas-el-tx$^w$/ — (Montler 1986: 87)
four-CONN=(LS)DOLLAR
'four dollars'

b. ʔəpən–él=ətx$^w$ — /√ʔpn-el=tx$^w$/ — (Montler 1986: 87)
ten-CONN=(LS)DOLLAR
'ten dollars'

However, as I have argued, in chapter 3, schwa is predictable in SENĆOŦEN. I assume that the schwa in these examples is excrescent, because the consonants either side of the final schwa can be syllabified with the other vowels. I suggest that the lexical suffix has one syllable, [tx$^w$] with [x$^w$] as its peak, not [ətx$^w$] with [ə] as its nucleus.

In (29), I formalise the data from (26). First, I assume that the last segment in the input is moraic. Candidate (a) wins. Candidate (b) loses because it violates Align-R. Candidate (c), having a three syllable foot, loses because it violates FT BIN σ. Candidate (d)

31 The data in (28) unfortunately have not been checked with a speaker. They are all from Monter (1986:87)

loses because it violates MAX-μ twice, as does Candidate (e) which also violates HEAD L. The fact that candidate (a) violates PARSE σ, means that we need to rank that constraint below FT FORM σ. Candidate (f) is not optimal because an unstressed full vowel is present in the output.

(29) s-ŋəs=ɨ́ɬč 'four trees'

| μ μ μ<br>s-ŋas-iɬč | ALIGN-R | WSP′ | MAX-μ | DEP-μ | HEAD L | FT BIN σ | PARSE σ |
|---|---|---|---|---|---|---|---|
| μ μ<br>☞ a. s. ŋə. (sɨ́. ɬč) | | | * | | | | * |
| μ μ<br>b.s. (ŋá. sə). ɬč | *! | | * | | | | * |
| μ μ<br>c. s. (ŋá. sə. ɬč) | | | * | | | *! | |
| μ<br>d. s. (ŋá. sə. ɬč) | | | **! | | | | |
| μ<br>e. s-(ŋəs-ɨ́ɬč) | | | **! | | * | | |
| μ μ μ<br>f. s-ŋa(s-ɨ́ɬč) | | *! | | | | | * |

### 4.2.2 Lexical Suffixes with No Full Vowel

In this section, I examine the stress pattern of lexical suffixes which do not contain a full vowel. These types of lexical suffixes surface in two ways: 1) the lexical suffixes with two consonants surface with one schwa and 2) the lexical suffixes with three consonants surface with two schwas. In section 4.2.2.1, I examine the monosyllabic lexical suffixes and in section 4.2.2.2, I investigate the disyllabic lexical suffixes. As in the previous sections, I show that the stress pattern of words which contain these kinds of lexical suffixes is predictable. One syllable lexical suffixes of this kind, when concatenated to a one syllable root will never bear stress. This is because they are the right hand member of a trochaic foot. However, two syllable lexical suffixes of this kind are always stressed. This is because they themselves constitute a trochaic foot which is aligned to the right edge of the word.

#### 4.2.2.1 Monosyllabic Lexical Suffixes

Montler (1986) reports 10 examples of two consonant lexical suffixes which surface with one schwa. These lexical suffixes are given in (30).

(30) MONOSYLLABIC LEXICAL SUFFIXES WHICH SURFACE WITH A SCHWA

| Lexical suffix | Meaning | Lexical suffix | Meaning |
|---|---|---|---|
| =čəp | fire | =qəč | small |
| =čəs | hand | =qən | hair |
| =kʷəɬ | torso | =qən | pharynx |
| =wən | mind | =əs | day |
| =ŋəxʷ | being | =sən | foot |

Of the 42 example forms given in Montler (1986), 35 (83%) conform to the stress pattern discussed in this thesis. When concatenated with a full vowel root, it is the root which attracts stress. This is expected, because stress is attracted to weight in SENĆOŦEN and because feet are trochaic. Some examples are illustrated in (31).

(31) a. KOYÍĆEP    qʷáy=čəp    /√qʷay=čp/    (FN 2006)
die=(LS)FIRE
'ashes'

b. ȽIW̱S    ɬíxʷ=s    /√ɬixʷ=s/    (FN 2006)
three=LS(DAY)
'Wednesday'

c. ŁIȾSEN    ɬit̓ᶿ=sən    /√ ɬit̓ᶿ=sn/    (FN 2006)
cut=(LS)FOOT
'He got cut on the foot'

The lexical suffixes in (31) do not have a full vowel and thus have no weight associated to them. In (32), Candidate (a) wins because stress falls on the full vowelled root and thus violates no constraint. Candidate (b) loses because stress falls on the lexical suffix and thus violates MAX-μ. Candidate (c) is out because there is an unstressed full vowel in the output.

(32)    qʷáyčəp 'ashes'

| μ<br>qʷay=čəp | ALIGN-R | WSP′ | MAX-μ | DEP-μ | HEAD L | FT BIN σ | PARSEσ |
|---|---|---|---|---|---|---|---|
| μ<br>☞ a. (qʷáy. čəp) | | | | | | | |
| b. (qʷəy. čə́p) | | | *! | | * | | |
| μ<br>c. (qʷáy. čəp) | | *! | | | | | |

When these kinds of lexical suffixes are concatenated to a vowelless root it is the root that bears the stress. This is because the two syllables in the word are of equal non-weight and in such cases left-headed binary feet are constructed. Some examples are given in (33).

(33) a. DEM,NES    t̓ə́m̓=nəs    /√t̓m̓=ns/    (FN 2006)
hit=LS(TEETH)
'He got hit on the teeth'

b. DEM,SEN    t̓ə́m̓=sən    /√t̓m̓=sn/    (FN 2006)
hit=LS(FOOT)
'He got hit on the foot'

Candidate (b) is disqualified from the competition because it has an iambic foot, thus violating HEAD L.

(34) t̓ə́m̓sən 'He got hit on the foot'

| t̓əm̓sən | ALIGN-R | WSP' | MAX-μ | DEP-μ | HEAD L | FT BIN σ | PARSE σ |
|---|---|---|---|---|---|---|---|
| ☞ a (t̓ə́m̓. sən) | | | | | | | |
| b.(t̓əm̓. sə́n) | | | | | *! | | |

These kinds of lexical suffixes are stressed if they are followed by a one syllable grammatical suffix. This stress pattern provides further evidence that it is more important to align trochaic feet to the right edge of the word than it is to stress a syllable with weight. When concatenated to a full vowelled root these lexical suffixes bear stress. This is because together with the following suffix they form a left-headed binary foot.

(35) W̱ŦEȻSEN,EṈ, SEN
xʷ-t̓ᶿəkʷ=sə́n̓-əŋ' sən /√xʷ-t̓ᶿekʷ=sn-ŋ sn/
LOC-wash[ACT]=LS(FOOT)-MID 1SUBJ
'I'm washing my feet.' (FN 2006)

In (36), candidate (a) wins because it violates the fewest number of constraints. Candidate (b) loses because it violates ALIGN-R and candidate (c) is eliminated because it violates HEAD L.

(36) xʷ-t̓ᶿəkʷ=sə́n̓-əŋ' 'He is washing his feet.'

| μ<br>xʷ-t̓ᶿekʷ=sn-ŋ +[ACT] | ALIGN-R | WSP' | MAX-μ | DEP-μ | HEAD L | FT BIN σ | PARSE σ |
|---|---|---|---|---|---|---|---|
| ☞ a. xʷ. t̓ᶿə (kʷ. sə́ .n̓əŋ') | | | * | | | | * |
| μ<br>b. xʷ. (t̓ᶿékʷ. sə.)n̓əŋ' | *! | | | | | | * |
| c. xʷ. t̓ᶿə (kʷ. sə. n̓ə́ŋ') | | | * | | *! | | * |
| μ<br>d. xʷ-t̓ᶿe(kʷ. =sə́ .n̓əŋ) | | *! | | | | | * |

#### 4.2.2.2 Disyllabic Lexical Suffixes with No Full Vowel

Montler (1986) reports three disyllabic lexical suffixes which do not contain a full vowel. These lexical suffixes are presented in (37).

(37) DISYLLABIC LEXICAL SUFFIXES WHICH SURFACE WITH TWO SCHWAS

| Lexical suffix | Meaning |
|---|---|
| =ənəkʷ | ground |
| =əw̓sə [32] | fire |
| =əqsən | nose |

Of the seven examples, which contain these types of lexical suffixes in Montler (1986), only one clearly conforms to the basic stress pattern for the language. Three of the seven forms in Montler (1986) are apparent exceptions to the stress analysis proposed in this thesis, and will be discussed in section 4.3. The other three are not being considered for the following reasons: one of them was rejected by both of the Saanich Elders I worked with and the other two are transcribed inconsistently in Montler (1986) and (1991). The form that follows the stress pattern is given in (38).

(38) a. TȻEQSEN
tkʷ=ə́qsən /√tkʷ=qsn/
break=LS(NOSE)
'He broke the point./He broke his nose.' (FN 2006)

### 4.3 Apparent Exceptions

In this section, I discuss nine examples from Montler (1986) that at first glance appear not to follow the basic stress pattern outlined in Chapter 3. However, in this section, I show how this analysis can in fact account for these forms. By assuming the presence, in SENĆOŦEN, of layered derivational structure, excrescent schwa, and prohibitions against

32 This suffix is unusual in that it ends in a vowel. I leave issues surrounding the status of this word final schwa for future research.

adjacent coronal segments, I show that the stress assignment of these examples is predictable.

This section is organised as follows. In section 4.3.1, I look at forms which appear to have fixed middles. In section 4.3.2, I look at forms with stacked lexical suffixes. In section 4.3.3, I discuss examples which contain an excrescent schwa. In section 3.3.4, I discuss an exception involving coronal segments.

### 4.3.1 Fixed Middles

The two examples below at first glance appear not to conform to the basic stress pattern. Stress is expected to fall on the penultimate syllable but it is the ante-penultimate syllable that is stressed.

(39)a. W̱ENITEMḴEN SEN
xʷənítəm=qən sən /√xʷnit-m=qn/ (FN 2006)
white man=pharynx 1subj
'I speak English'

b. W̱KÁTXEMNEĆ
xʷ-q̓étx̌-əm=nəč /xʷ-qetxʷ-m-nč/ (FN 2006)
LOC-shake a rattle-MID=(LS)TAIL
'Rattle Snake'

In both cases, stress is predicted to be penultimate, however it is not. Both examples share in common a penultimate syllable with an /m/ coda. This syllable is glossed as the middle in one of the examples. /m/ is the middle suffix for other Salish languages; (for example, Hulq'umi'num' (Cowichan) another Coast Salish language) (Leslie 1979). As mentioned in Chapter 1, it has been argued that historically /-m/ became /-ŋ / in SENĆOŦEN (see Kuipers 2002), but examples such as (39a,b) suggest that there are remnants of proto /m/ in the synchronic grammar. I propose that synchronically a root and this historic middle suffix constitute their own phonological stem. This phonological stem is the domain for stress assignment. Left-headed binary feet are built from the right edge of this phonological stem. I further propose that when the lexical suffix is added to this phonological stem, stress remains faithful to the stress assignment of the phonological stem and that the second lexical suffix, in these examples, resides outside of this phonological stem. This is illustrated in (40).

(40) [ xʷə(nî̂təm) ]=qən

An investigation of the phonological stem and the presence of layered derivational structure in SENĆOŦEN is beyond the scope of this thesis. Previous work investigating the phonological stem in Salish languages includes Czaykowska-Higgins (1998, 2004); Dyck (2004); Bar-el & Watt (2000); Shaw (2002).

### 4.3.2 Stacked Lexical Suffixes

Root plus lexical suffix combinations which have more than one lexical suffix also do not always appear to follow the basic stress pattern outlined for SENĆOŦEN. The examples in (41) all have ante-penultimate stress.

(41)a. W̱SÁNEĆḴEN SEN

xʷ-sé=nəč=qən sən /xʷ-√se=nč=qn sn/
LOC-Saanich=LS(PHARYNX) 1SUBJ
'I speak Saanich' (FN 2006)

b. NEŦÁL,NEW̱ḴEN

nəθ-él̓=ŋəxʷ=qən /√nθ-el-ŋxʷ=qn/
?-CONN=LS(BEING)=LS(PHARYNX)
'Westcoast language' (FN 2006)

c. KETSENTEN

q̓ə́t=sən=tən[33] /√q̓t=sn=tn/
wrap around=LS(FOOT)=LS(INST)
'Dancer's leg wraps' (FN 2006)

---

33 The instrumental suffix is considered to be a lexical suffix in many of the other Salish languages. In these examples I assume that to be the case for SENĆOŦEN.

d. X̱EṈ,ÁLEḴEN
x̌ʷəŋ'=éləq=ən /√x̌ʷŋ'=elq=n/
fast=LS(WAVE)=LS(INST)
'Swift water' (FN 2006)

The second lexical suffix acts as if it were not available for stress assignment, since it is never stressed. The reason for this is similar to the explanation given in section 4.3.1. The examples in (41) are all cases where the root and the first lexical suffix act as a semantic unit as well as a phonological unit. I propose that together they from a phonological stem, which is the domain for stress assignment, and that the second lexical suffix resides outside of this domain. The root and the first lexical suffix combined carry a specific meaning. The second lexical suffix serves to extend that meaning further. Stress within the phonological stem is predictable. Left-headed binary feet are built from the right edge of the phonological stem.

(42) xʷ-[ (sé =nəč) ] =qən

As mentioned above, I leave the investigation of the phonological stem and the presence of layered derivational structure in SENĆOŦEN for future research.

### 4.3.3 Excrescent Schwa

In this section, I argue that a number of apparent exceptions can be accounted for by arguing for the presence of an excrescent schwa which does not count for stress.

In the examples below stress appears on the ante-penultimate syllable rather than the penultimate one. In all cases, one of the two schwas is not phonologically motivated. In (43) for instance, the occurrence of an /l/ next to a /t/ should be tolerated, as the /l/ can be syllabified as the coda of the preceding syllable and the /t/ can be syllabified as the onset of the following syllable. The fact that a schwa appears here, therefore, suggests it is transitional, rather than phonologically motivated. The excrescent schwa in question is underlined in the examples.

(43) DEḴŁNÁLETEṈ    t̓ik̓ʷ=ɬnél-ə̲t-əŋ    /√t̓ik̓ʷ=ɬnel-t-ŋ/ (FN 2006)
choke=LS(THROAT)-CTR-MID
'He got strangled.'

In (44), again, there is no phonological reason for the schwa to surface between the /l/ and the /q/.

(44) DEM,ÁLEḴSEN    t̓əm̓-él=ə̲qsən    /√t̓m̓-el=qsn/ (FN 2006)
hit-CONN=LS(NOSE)
'He got hit on the nose'

The /l/ can be syllabified as the coda to the preceding syllable and the /q/and /s/ form a legitimate word initial cluster, as shown in Chapter 2, so there is no reason why they cannot form a legitimate cluster in this instance. For these reasons, I assume that the schwa between [l] and [q] is excrescent and as such has no phonological role in regards to stress assignment.

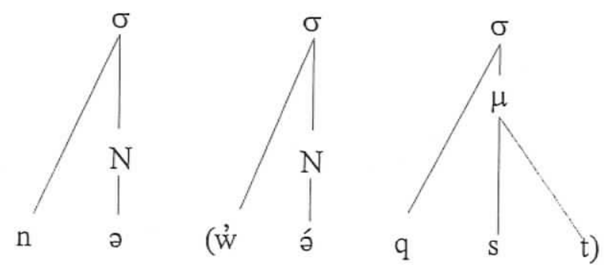
### 4.3.4 Coronals

The following example appears to be an exception to the general stress pattern. This word seems to have an iambic stress pattern.

(45) NEW,EḴST    nəw̓=ə́qs-t    /√nw̓=qsn-t/ (FN 2006)
inside=LS(NOSE)-CTR
'Stick it in. (something pointed into something hollow)'

The stress assignment of this example is unusual because both syllables are of equal weight. The analysis discussed so far predicts that stress should fall on the first schwa. As mentioned in Chapter 3, I suggest that the language does not tolerate a cluster involving [n] and [t]. Similar types of prohibitions have been noticed in (St'át'imcets) Lillooet [Interior Salish] (Blake, 1998). The example in (45) is syllabified as follows:

(46)




The diagram in (46) shows that the example in (45) has three syllables and that a trochaic foot is built from the right edge. I suggest, following Shaw (1993) and Roberts & Shaw (1994), that the /s/ is the peak of the last syllable.

## 4.4 True exceptions

The forms in (41) do not follow the stress pattern outlined for SENĆOŦEN.

| | | | | |
|---|---|---|---|---|
| (47) a. | ȽX̱IḰ | ɬt̓$^{θ}$=íq$^{w}$<br>cut=(LS)HEAD<br>'He, she, it cut the top off.' | /√ɬit̓$^{θ}$=iq$^{w}$/ | (FN 2004) |
| b. | ṈESÁȽ | ŋəs=éɬ<br>four=(LS)TIMES<br>'four times' | /√ŋas=eɬ/ | (FN 2006) |
| c. | ȽW̱EȽ | ɬx$^{w}$=éɬ<br>three=(LS)TIMES<br>'three times' | /√ɬix$^{w}$=eɬ/ | (FN 2006) |

These types of forms are predicted to have stress on the first underlying full vowel. However, this is not the case. It may be that these lexical suffixes, or these particular words are in fact lexically specified for stress. In regards to example (47a), I found that the lexical suffix for *head* was always stressed regardless of the vowel quality of the root that it attached to (Leonard 2005). The examples (47b,c), on the other hand, could perhaps be a result of homophony avoidance. SENĆOŦEN has a durative suffix which always surfaces as [əɬ]. If stress were to fall on the first syllable of the examples in (47b,c), then the lexical suffix meaning *times* would become homophonous with the durative suffix and arguably could be confusing. However, in this thesis, I am focussing only on the predictable properties of SENĆOŦEN stress and leave these and other questions about the possible morpho-lexical nature of SENĆOŦEN stress for future research.

### 4.5 Chapter Summary

The purpose of this chapter was to demonstrate that the stress assignment of morphologically complex words involving lexical suffixes, can be accounted for without referring to the morphological hierarchy proposed by (Montler 1986:23). This Chapter has shown that, for the most part, words which are formed from the concatenation of a root and lexical suffix conform to the basic stress pattern proposed for roots in Chapter 3. I organised the lexical suffixes in terms of their surface shape and the quality of the vowel they contained. With the exception of the set that surface with two schwas, all of the combinations yielded a high percentage that conformed to the basic stress pattern. The conformity rate was between approximately 70%-90%.

I also proposed that although the lexical suffixes for *plant, building* and *tens* surface with only one full vowel, they should be considered disyllabic. This proposal is consistent with the hypothesis set forth in Roberts (1993) and Shaw (1993), that consonant clusters form their own non-nucleic syllable. Many of the apparent exceptional forms in Montler (1986) were explained straightforwardly, by taking into account factors such as layered derivational structure, excrescent schwa, and prohibitions against adjacent coronals.

# CHAPTER 5
## Conclusion

In this thesis, I have provided a phonologically motivated account of stress in SENĆOŦEN. Drawing on previous work by Dyck (2004) and Kiyota (2003), I was able to show that for the majority of lexical stems, stress is predictable. First, in Chapter 2, I showed how the phonotactic constraints against certain consonant clusters provided evidence that schwa is predictable in SENĆOŦEN. In Chapter 3, I examined the stress pattern of disyllabic roots, illustrating that feet are trochaic and full vowelled syllables attract stress over syllables which contain a schwa. Following Shaw et al (1999), I proposed that schwa was both weightless and featureless in SENĆOŦEN. The constraint ranking needed to account for disyllabic roots was as follows:

(1) WSP′, MAX-μ, DEP-μ, HEAD L >> FT-BIN σ, PARSE σ

In Chapter 4, I examined polymorphemic forms which have lexical suffixes. In previous literature, these forms were considered to be lexically specified for stress (Montler 1986: 23). In this thesis, I was able to show that many forms of this type could be accounted for straightforwardly by aligning trochaic feet to the right edge of a word. These forms also highlighted the presence, in SENĆOŦEN, of layered derivational structure, excrescent schwas and a ban on adjacent coronal segments. All of these aspects of SENĆOŦEN grammar warrant further research. The revised constraint ranking needed to account for polymorphemic forms was as follows:

(2) ALIGN R>> WSP′ >> MAX-μ, DEP-μ, HEAD L >> FT-BIN σ >> PARSE σ

The findings in this thesis strongly suggest that there is less morphologically governed stress in SENĆOŦEN than was previously thought. However, only disyllabic roots and words with lexical suffixes were examined. In order to understand fully the stress system of SENĆOŦEN it is necessary to examine different types of morphemes present in the language

The next steps in accounting for stress in SENĆOŦEN are 1) to examine a much larger corpus of words and check these with speakers of SENĆOŦEN and 2) to find out if the stress pattern of other types of words can be accounted for by using the analysis presented in this thesis. The types of processes that need careful attention are reduplication, infixation, stress shift and metathesis. Much of SENĆOŦEN morphology utilises these processes. Also, the language has many particles and clitics, whose role in stress assignment also warrants investigation if we are to determine how stress is assigned in SENĆOŦEN. This thesis provides a crucial starting point for such a study.

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# Appendix A

## Dave Elliott Alphabet with Phonetic Equivalent

| *DEA* [34] | *APA* | *IPA* | *DEA* | *APA* | *IPA* | *DEA* | *APA* | *IPA* |
|---|---|---|---|---|---|---|---|---|
| A | ɛ | ɛ | K | q̓ | q’ | Q | k̓$^{w}$ | k$^{w’}$ |
| Ⱥ | ey | ej | Ꝁ | q̓$^{w}$ | qw’ | S | s | s |
| Á | e | e | K̲ | q | q | Ś | š | ʃ |
| B | p̓ | p’ | Ḱ | q$^{w}$ | q$^{w}$ | T | t | t |
| C | k | k | L | l | l | T̲ | ƛ̓ | tɬ’ |
| Ć | č | tʃ | Ł | ł | ɬ | Ŧ | θ | θ |
| Ȼ | k$^{w}$ | k$^{w}$ | M | m | m | T̸ | t̓$^{θ}$~c̓ | tθ’~ts’ |
| D | t̓ | t’ | N | n | n | U | u~əw | u~əw |
| E | ə | ə | N̲ | ŋ | ŋ | W | w | w |
| H | h | h | O | a | a | W̲ | x$^{w}$ | x$^{w}$ |
| I | i | i | P | p | p | X | x̌ | χ |
| Í | əy~ay | əj~aj | | | | X̲ | x̌$^{w}$ | χ$^{w}$ |
| J | č̓ | tʃ’ | | | | Y | y | j |
| | | | | | | Z | z | z |

34 DEA=Dave Elliott Alphabet, APA=Americanist Phonetic Alphabet, IPA=International Phonetic Alphabet

## Appendix B

### Mini Language Lesson One
### Stress in SENĆOŦEN

1) What is word stress?

In SENĆOŦEN, we do not say each syllable with the same force or strength. In one word, we accentuate ONE syllable. We say **one** syllable very **loudly** (big, strong, important) and **all the other syllables** more **quietly**

Lets take four SENĆOŦEN words. Are they said the same way?

TI,TOS ________ Bucking Tide

________

SȻONI̱, ________ Head

________

DEM,IḰEṈ ________ He got hit on the head

________ ________

X̱EȻSENEṈ ________ He washed his foot

________ ________

Q: How do we know where stress will fall?

In SENĆOŦEN it is usually the first vowel that is said with the most force.

However not all vowels in SENĆOŦEN are the same. There is an E which is much shorter than all the other vowels.

E only attracts stress when there are no other types of vowels in the word.

There are also two kinds of I's

1) One is vowel which gets stressed
2) The other is a kind of E and does not

Also in words with three vowels, stress is attracted to the second vowel, even if it is an E.

So, lets look at our four words again and see if we can predict where the stress will fall.

1) TI,TOS — Q: Why is stress is on the second vowel?

A: Because the first vowel is the kind of I that does not take stress.

2) SK̵OṈI, — Q: Why is stress on the first vowel?

A: It is the first of two full vowels so it attracts stress,

3) DEM,IḰEṈ — Q: Why is stress on the second vowel?

A: Because E's can't be stressed if there is another type of vowel present.

4) X̵EȻSENEṈ — Q: Why is stress on the second vowel?

A: In SENĆOŦEN, words with more than three E's will always stress the second to last one.

# Appendix C

## Mini Language Lesson Two
## Accidents Happen.
## How to Tell Someone You Have Hurt Yourself in SENCOŦEN by Using Lexical Suffixes.

Accidents can happen at any time so it is useful to be able to tell someone that you have hurt yourself. It is also important to let the person know where on your body you are hurt.

One way that you can do this in SENCOŦEN is by using lexical suffixes.

**(1) What is a lexical suffix?** A lexical suffix is a small word that can attach to another word to form a new word or sentence. Here are four lexical suffixes for you to learn. Notice that there are also full nouns in the language that have the same meaning as the lexical suffix.

| Full Noun | | Lexical Suffix | |
|---|---|---|---|
| SḴOṈI | **head** | **IK** | **head** |
| ŦOŦEN | **mouth** | OŦEN | mouth |
| S,OŦES | face | ES | face |
| SXENO, | foot | SEN | foot |

**(2) What sort of words do lexical suffixes attach to?** One type of word that a lexical suffix can attach to is a verb. A verb is a doing word and often describes an action.

**(3) Which verb will we use for our lesson?** We will use the verb for hit DEM,. By attaching a lexical suffix to this word you will be able to tell someone where on your body you were hit.

**(4) Try to complete the following sentences:** (use your flashcards to help you.)
Keep in mind that SEN means **I.**

DEM,______ SEN I got hit on the head

DEM,______ SEN I got hit on the mouth

W̱DEM,_______SEN I got hit on the face **(DO YOU NOTICE ANYTHING DIFFERENT??)** *the verb needs an extra sound.*

DEM,_____ SEN I got hit on the foot. **(DO YOU NOTICE ANYTHING??)**
*the lexical suffix for foot and the word for I look the same.*

I, TŦEN SCȺ (good work) Now try this.
**(5) Give the SENCOŦEN version for the whole sentence.** (Use your flash cards to help you.)

**I got hit on the head** ____________________________SEN

**I got hit on the face**____________________________ SEN
**(Careful do you need to remember something special here??)**

**I got hit on the foot** ____________________________SEN
**(remember that you need the same sound twice)**

**I got hit on the mouth** ____________________________SEN

I, TŦEN SCȺ (good work)
**(6) Can you recognize these** SENCOŦEN **forms?**(use your flashcards to help you)

DEM,IK SEN ____________________________

W̱DEM,ES SEN ____________________________

DEM,OŦEN SEN ____________________________

DEM,SEN SEN ____________________________

I, TŦEN SCȺ **(good work) Now you are able to let someone know that you have had an accident and where on your body you have hurt yourself.**

## Appendix D

**List of words recorded at the Saanich Native Heritage Society.**
**Brentwood Bay; May 2006**

| Dave Elliott | NAPA | ENGLISH |
|---|---|---|
| ȾEKI | θə́qi | sockeye |
| ȻEĆIL | kʷəčil | morning |
| KEKI, | q̓ə́q̓iʔ | guts |
| ȾOTX | θátx̌ | halibut |
| ĆIĆX | čičx̌ | cherry pitch bark |
| ÁSW̱ | ʔésxʷ | seal |
| SȻOTI | skʷáti | crazy |
| TI,TOS | tiʔtás | bucking tide |
| DALU, | t̓éləw̓ | arm |
| SḴELÁW, | sqəléw̓ | beaver |
| SŁOṈET | sɬáŋət | herring |
| Ḵ ELEX | qə́ləx̌ | salmon eggs |
| TÁḴEŁ | téqəɬ | spear grass |
| Ṯ ÁḴT | ƛ̓éqt | long |
| TḴÁP | tqép | fishtrap |

| | | |
|---|---|---|
| HEMU, | həmúʔ | pigeon |
| SEMI, | səmíʔ | blanket |
| XEŚEN, | x̌ə́šən̓ | trap |
| NEW̓,ÁS | nəw̓és | put inside |
| KTEX | q̓tə́x̌ | rattle |
| ṮḴÁY, | ƛ̓q̓ʷéy̓ | salmon melt (insides of a fish - sperm eggs; white) |
| TSOS | tsás | poor |
| TX̱IN | tx̌ʷín | where (to) go |
| PW̱ÁṈ | pxʷáŋ | Forest Island |
| TW̱E | txʷə́ʔ | instead |
| TĆÁS | tčés | Discovery Island |
| ȾXIT | tᶿx̌ít | gravel |
| JSÁY | č̓séy | Douglas fir |
| ĆȽET | čɬə́t | thick |
| ȽW̱ÁȽ | ɬxʷéɬ | three times |
| ĆQEN | čk̓ʷə́n | caught a glimpse of |
| ĆKEN, | čqə́n̓ | file |

| | | |
|---|---|---|
| JTEN̲ | č̓tə́ŋ | crawl |
| ŁKIT | ɬqít | clothing |
| XTIT | x̌tít | make something |
| SCOŁ | ščáɬ | firewood |
| SK̲EK̲ET̲ | sqə́qəƛ̓ | shadow |
| NEȻIM | nəkʷím | red |
| NEKIX | nəq̓íx̌ | black |
| NEḰÁY | nəqʷéy | green |
| W̲SÁNEĆK̲EN SEN | xʷ-sé=nəč=qən sən | I speak Saanich |
| N̲ EŦÁ,LN̲EW̲K̲EN | ŋəθ-él̓=ŋəxʷ=qən | West coast language |
| K̲ ETŚENTEN | qə́t=šən=tən | dancer's leg wraps |
| X̲EN̲,ÁLEK̲EN | x̌əŋ’=éləq=ən | swift water |
| ŚW̲ĆEḰSÁLE, | š-xʷ-čəqʷ=séləʔ | fireplace |
| DEꝀŁNÁLETEN̲ | t̓əq̓ʷ=ɬnél-ət-əŋ | He got strangled |
| HÁUT | héwt | rat |
| ĆIX̲ | číx̌ʷ | fall apart |
| WEXES | wə́x̌əs | March/frog |
| K̲ ELÁT | qəlét | have some more |

| | | |
|---|---|---|
| Ḱ ENI | qʷəníʔ | seagull |
| QELU, | k̓ʷə́ləw̓ | skin |
| KEMET | q̓ə́mət | sawbill |
| X̲O,EḴ | x̌ʷáʔəq̓ʷ | sawbill |
| ĆELEM | čə́ləm | eel grass |
| ŚELOQ TŦE TEṈEW̲ | šəlák̓ʷ tᶿə təŋəxʷ | the world is round |
| LELEJ | lə́ləč̓ | yellow |
| ŦIȻT | t̓íkʷt | sea cucumber |
| Ḵ ÁMQ | qémk̓ʷ | gooseberry |
| KÁB | q̓ép̓ | catch a disease |
| W̲ÁLEḴ | xʷéləq | almost happened but didn't happen |
| DÁMW̲ÍK SEN | t̓emxʷ-əy=q̓sən | Gooseberry Pt (Lummi) |
| ŁEYEK | ɬə́yəq̓ | shiner |
| ȾIDES | tᶿít̓əs | front |
| ḰÍ | qʷáy | die |
| X̲ILNEW̲ | x̌ʷíl-nəxʷ | lose it |
| X̲O,DEŁ | x̌ʷáʔt̓əɬ | Spieden Island |
| W̲IQES | xʷ=ík̓ʷəs | red throated loon |

| | | |
|---|---|---|
| SOTEĆ | sátəč | Northeast wind |
| TÁ⌀EL | tékʷəl | daybreak |
| DÁ⌀EL | t̓ékʷəl | cross over the water |
| ȾÁ⌀EN̲ | tᶿéqʷəŋ | sweet |
| K̲ÁK̲EN | qéqən | house post/cross beam |
| KÁKEN, | q̓éq̓ən̓ | stealing |
| BO,ȾES | p̓áʔtᶿəs | cradle board |
| N̲EȾEŁ | ŋə́tᶿəɬ | pus |
| ȾEX̲EN, | tᶿə́x̌əŋ' | Indian plum |
| DEMÁLEK̲SEN | t̓əm-él=əqsən | He got hit on the nose |
| ꝀOÍĆEP | q̓ʷáy=čəp | ashes |
| SŦPÁLK̲EN | sθp-él=qən | feather |
| ŚW̲,EWOL,ĆES | šxʷʔəw-ál̓=čəs | cat's cradle |
| NEW,EK̲ST | nəw̓=ə́qst | stick it in |
| ĆEL,ĆEḰ | čə́l̓čəqʷ | caught fire |
| DEM,SEN | t̓ə́m̓=sən | He got hit on the foot |
| KELOŦ | q̓əl=áθ | It's dull edge |
| W̲ȾE⌀SEN,EN̲, SEN | xʷ-tᶿəkʷ=sə́n̓-əŋ' sən | I am washing my foot |

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|---|---|---|
| W̱ŦEØEL,KEN, | xʷ-tᶿəkʷ-əĺ=qən sən | I am washing wool |
| TØEḴSEN | tkʷ=əqsən | He broke the point |
| SEKELIU,SE | səq̓-əl=əw̓sə | splitting firewood |
| YÁ SEN SKOLIU,SE | yé sən sq̓a-l=əw̓sə | I'm gonna split firewood |
| MEṮÁL | məƛ̓él | pass out |
| NEŦÁW̱ | nətᶿéxʷ | once |
| Ṉ ESEN, | ŋəsəń | louse |
| ÁLEṈENEØS | ʔeləŋ=ənəkʷ-s | It's their home ground |
| W̱ENITEMḴEN SEN | xʷənítəm=qən | I speak English |
| W̱QÁTXMNEĆ | xʷ-k̓ʷétx̌əm=nəč | rattle snake |
| SO,YEM | sáy̓əm | bitter |
| TOM,EL | táḿəɬ | warm water |
| Á,IOL | ʔéʔəyal | keep on going |
| SX̱I,ÁM, | sx̌ʷiʔéḿ | mythical story |
| EY, | ʔəý | good |
| I,ÁNØES | ʔiʔ=énkʷəs | brave |
| ĆÁY | čéy | he works |
| ĆÁYĆI | čéyči | diligent |

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|---|---|---|
| SḴÁŁEX | sqéɬəx̌ | mud vein of clam/clam fork |
| SPÁ,W̱EṈ, | spéʔxʷəŋ' | misty |
| SṈÁNET | sŋénət | mountain |
| DÁJEK | t̓éč̓əq̓ | to get angry |
| SPÁ,EŦ | spéʔəθ | bear |
| XÁĆEṈ | x̌éčəŋ | dry |
| YI,XEM, | yíʔx̌əm̓ | huckleberry |
| X̱IX̱YES | x̌ʷíx̌yəs | Saturna Island |
| SILE, | síləʔ | grandparent |
| X̱ELDEP | x̌ə́lt̓əp | flying snake |
| XOĆE, | x̌áčəʔ | lake |
| SOX̱EL | sáx̌ʷəl | grass/hay |
| SO,EȻ | sáʔəkʷ | Sooke |
| S,ÁLEW̱SET | s-ʔéləxʷ-sət | person/thing getting too old to use |
| SENI, | səníʔ | Oregon grape berry |
| EȻO,ST | ʔəkʷáʔs-t | teach |
| EN,OW̱ | ʔən̓áwʷ | bring over |
| ĆELÁL | čəlél | almost |

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|---|---|---|
| QELEW, | k̓ʷə́ləw̓ | skin |
| LEȻEX | lə́kʷəx̌ | rib |
| ḰENES | qʷə́nəs | whale |
| QUYEȻ | k̓ʷə́wəkʷ | fish hook |
| KELEK | q̓ə́l əq̓ | tangled |
| K̲EM,EL | qə́m̓əl | flood |
| QSEĆ | k̓ʷséč | trout |
| KBOX | q̓p̓áx̌ | hazel nut |
| IST | ʔíst | paddle |
| DEDÁ,YEK | t̓ət̓éy̓əq̓ | angry |
| ŚȾEN,Ⱦ | št̓ᶿə́n̓ t̓ᶿ | all squished together |
| EW,Q | ʔə́w̓k̓ʷ | finished off |
| K̲EL,K̲ | qə́l̓q | rosebud |
| ÁWQ | ʔéwk̓ʷ | stuff |
| ĆÁWT | čéwt | admire |
| ḰÁ,I,YEL | qʷéʔiʔyəl | telling someone something |
| T̲EWEN̲ | ƛ̓ə́wəŋ | howl |
| TÁYEL | téyəl | upstream area |

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|---|---|---|
| STIḴIW | stíqiw | horse |
| JÁW,I, | č̓éw̓iʔ | dish |
| ŦÁLE, TŦE SĆÁNEW̱ | θéləʔ tᶿə sčeenəxʷ | salmon heart |
| KÁṈI, | q̓éŋiʔ | girl |
| SOX̱EȽÁUTW̱ | saχ̌əɬ=éwtxʷ | barn |
| Ṉ ESȽŚÁ, | ŋəs=ɬšéʔ | forty |
| SṈESIȽĆ | sŋəs=ílč | four trees |
| ĆEḴÁUTW̱ | čəq=éwtxʷ | long house |
| ȽKEĆSȽŚÁ | ɬq̓ə=čs=ɬšéʔ | fifty |
| ĆEṈ,IȽĆ | čəŋ’=íɬč | oak tree |
| EY,OŦ | ʔəy̓=áθ | its sharp edge |
| ŚTOKEŦ | štáq̓=əθ | whetstone |
| SȽIW̱S | s-ɬíxʷ=s | Wednesday |
| ȻEXŦINEṈ | kʷəx̌=θín-əŋ | He screamed/He's screaming |
| ȽEPXELOSEṈ | ɬəpx̌=əlás-əŋ | He blinked/He's blinking |
| EXŦINEṈ | ʔəx̌=θín-əŋ | I shaved |
| QSIȻES | k̓ʷs=íkʷəs | He singed the feathers |
| Ṉ ESOMET | ŋəs=ámət | four blankets |

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|---|---|---|
| SȾEM,INES | s-t̓ᶿəm̓=ínəs | sternum |
| ĆḴIḴEN | čq=íqən | He is big bellied |
| DEM,IḴEN SEN | t̓əm̓=íqən sən | I got hit on the belly |
| ŁĆIȻES SEN | ɬč=íkʷəs sən | I am tired |
| TȻÁĆSEṈ | tkʷ=éčsəŋ | He broke his neck |
| ŁEꝀSISTEṈ | ɬəq̓ʷ=sís-t-əŋ | He got slapped on the hand |
| ŚQENOSEṈ | š-k̓ʷən=ás-əŋ | mirror |
| T̲ EKTOLES | ƛ̓əq̓t=áləs | oblong |
| NEJOLES | nəč̓=áləs | multicoloured |
| SȾEM,OŦEN | s-t̓ᶿəm̓=áθən | top jaw |
| T̲ ĆOŦEN | ƛ̓č=áθən | bottom jaw |
| DEM,OŦEN | t̓əm̓=áθən | He got hit on the mouth. |
| ŚPOLES | šp=áləs | pare/peel |
| LEXOLES | ləx̌=áləs | loose weave |
| T̲ȾOLES | ƛ̓tᶿ=áləs | tight weave |
| ȾEȻIḰEṈ | tᶿəkʷ=íqʷ-əŋ | She's washing her hair. |
| ŁQÁSES | ɬk̓ʷ-é=səs | He got hooked on the hand. |
| W̲T̲EḴTNEĆ | xʷ-ƛ̓éqt=nəč | cougar |

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|---|---|---|
| W̱NÁJES | xʷ-néč̓=əs | He looks different |
| Ṉ EN,ÁȽ | ŋəń=éɬ | lots of times |
| ȽKEN | ɬq̓=én | one of a pair of earrings |
| ȻEŦNÁĆT | kʷəθ=néč-t | He tilted it. |