5 Lexical Accents and Head Dominance in Polysynthetic Languages

The Salish Languages

5.1. Introduction

This chapter extends the theory of head dominance to languages of polysynthetic morphology. In such languages, words consist of multiple morphemes that encode several semantic and syntactic notions. The term ‘incorporating languages’ is also used to describe such systems. Polysynthetic languages raise interesting questions about the relationship between morphology and syntax. The essential property of morphology is that it is concerned with the structure of words; the essential property of syntax is that it is concerned with the structure of sentences. However, the two components of grammar in polysynthetic languages are intimately related and the demarcation between them is sometimes fuzzy. Some processes in languages like Greek and Russian occur at the level of the sentence while in polysynthetic languages these processes take place within the word. For example, a verb may combine with its object and subject to form a word. What is striking in such languages is that morphological changes are in line with the syntactic operations with which they are associated. This generalization follows from the principle of Universal Grammar known as the Mirror Principle (Baker 1985, 1988), which states that morphological derivations must directly reflect syntactic derivations (and vice versa).

Given the characteristics of polysynthetic languages, it will be interesting for us to test whether morphological constituents that have an important status in the morphosyntactic structure behave differently than others with respect to stress.

As mentioned earlier in this thesis, the material for this chapter is drawn from a North American family of languages, namely the Salish or Salishan family. Like many native American languages, the Salishan languages are polysynthetic. The family is comprised of languages located in Washington and southern
British Columbia. It is divided into two large groups: Coast Salishan and Interior Salishan. Within the Interior division two groups are recognized, a northern and a southern one. The focus of this chapter will mainly be on two languages of the Northern Interior branch of the family, namely Thompson (Nleʔképmx) and Lillooet Salish (St’at’imcets). Both languages are spoken in British Columbia. I also use examples from two Salish languages of the Southern Interior branch, namely Moses-Columbia (Nxa’amxcín) and Spokane.

The following section provides a rough guide to the main ideas of this chapter.

5.1.1. Theoretical explorations in Chapter 5

In order to present the central proposal of this chapter it is necessary to familiarize the reader with the complex morphological structure of the Salish word. Thus, some background information needs to be provided first.

Morphemes in Salish are of two types: roots and affixes. Most roots are free, i.e. they can, on occasion, constitute words by themselves. But many words are complex, containing in addition to a root, one or more affixes. Affixes are bound, meaning they never occur except as parts of such complex words. Some affixes are ‘prefixes’, which appear before roots. Most affixes are ‘suffixes’, which follow the root. A few affixes are ‘infixes’, that is, they occur between the root and another suffix. Finally, there are also some ‘reduplicating affixes’.

In this study only suffixes are examined. Prefixes fall outside the scope of the stress rule that applies within the word. This is another instantiation of the well-known phenomenon of prefix-suffix asymmetry. Infixation and reduplication, on the other hand, have their own value for prosodic morphology but fall outside the goals of the present study.

The morphological constituents found in the words of the Salish languages examined here are, besides the root, the morphological stem and the morphological word (Czaykowska-Higgins 1996). The former constituent encodes the lexical content of the word, whereas the latter constituent encodes the morphosyntactic content of the word.

The morphological stem is composed of the root, the locative and reduplicative prefixes as well as primary affixes (PA) (mainly the ‘inchoative’ infix /-p/) and lexical suffixes. Lexical suffixes (LexS) are bound morphemes with lexical referents. In some cases these resemble incorporated nouns but usually have no corresponding free-standing morphemes in the synchronic grammar. In general only one lexical suffix occurs in a word, but there are cases where two or three co-occur. Lexical suffixes play an important role in this chapter as will shortly become apparent. In sum, the Salish morphological stem has the following structure.
HEAD DOMINANCE IN POLYSYNTHETIC LANGUAGES

(1)  
\textit{Salish morphological stem}^{1}
LOC-RED/\sqrt{\text{ROOT}+\text{RED}-\text{PA}=\text{LEXS}}

n/q”y=úym’x¨-m  ‘bake in earth oven’
\text{LOC- }\check{\text{cook}=\text{earth(oven)}}  \textbf{(Thompson)}

na/húy+huy=cin  ‘loud person’
\text{LOC- }\check{\text{irritate}+\text{RED(CVC)=mouth}}  \textbf{(Moses-Columbia)}

The \textit{morphological word} includes transitive markers such as the ‘directive’ (DR), ‘transitive’ (TR) and ‘causative’ (CAUS) suffixes. It also includes object (O) and subject (S) marking, or intransitive markers (ITR). Directive morphemes function similarly to what are often called applicative morphemes in other languages. Their function is to raise non-direct arguments such as benefactives, indirect objects or possessors to direct object position. Transitive inflection adds sequences of object and subject suffixes to roots (or stems) formed with the transitive former /-t/. Causative inflection is marked by a suffix (usually /-s/) before the transitivizer. The intransitive category are includes a ‘middle’ marker (usually /-m/) as well as aspectual suffixes, modals (definitive, perseverative), and reflective and reciprocal markers. The aspectual markers can be either prefixes, which distinguish non-perfective and stative aspects, or suffixes which express habitual, translocational, iterative meanings. The focus will be mainly on aspectual suffixes.

(2)  
\textit{Salish morphological word}
ASP-LOC-RED/\sqrt{\text{ROOT}+\text{RED}-\text{PA}=\text{LEXS-DR-CS-TR-O-S}}
\quad \text{-ASP/MOD/RFL/REC}

cuw-e-t-∅-es  ‘he makes s.t.’
\check{\text{do}-\text{DIR}-\text{TR}-3\text{sgO}-3\text{sgS}}  \textbf{(Thompson)}

k/λ’am’-n-t-sa-s  ‘he went past me’
\text{LOC- }\check{\text{pass-CTR-TR}-1\text{sgO}-3\text{sgS}}  \textbf{(Moses-Columbia)}

s-k/ux”-p=akst  ‘handbag’
\text{ASP-LOC- }\check{\text{hang-INCH}=\text{hand}}  \textbf{(Moses-Columbia)}

^{1} \text{I use ‘/’ to designate a root, ‘+’ to indicate a reduplicative affix, and ‘=’ to indicate a suffix that belongs to the lexical suffix category. A prefix has a hyphen, except when it is immediately followed by a root, then a slash (/) is used.}
In general, we distinguish a morphological and syntactic component within the word, which roughly coincide with the domains of morphological stem and morphological word, respectively. As I show later, stem-formation is mainly the result of syntactic processes which have a lexical flavor in the sense that they change or extend the lexical meaning of the root. On the other hand, the formation of the (in)transitive word is the byproduct of purely syntactic rules that reflect the syntactic frame or argument structure of a stem, or determine its inflectional (i.e. configurational, agreement) properties.

One of the main proposals in this chapter is that the difference between the morphologically based and syntactically based derivation influences accentuation. More specifically, I argue that at the level of the stem, the Salish languages analyzed in this study exhibit the characteristics of a head-dependent system with lexical accents, whereas at the level of the morphological word (i.e. grammatical suffixation) they behave as head-stress systems. The notion of ‘head of the word’ proves to be crucial here although it is defined in a different way than headedness in fusional languages like Greek and Russian.

Since reduplication, prefixation and infixation are not closely related to the main theme of this study, the two components which will be recognized as central for the accentuation of the stem are the root\(^2\) and the lexical suffix. It has been argued by Saunders and Davis (1977), Gerdts and Hinkson (1996), Czaykowska–Higgins (1996), Czaykowska–Higgins, Willett and Bart (henceforth CWB) (1996), Gerdts (1998), among others, that most lexical suffixes exhibit properties that one would expect them to have if they were incorporated nouns.\(^3\) This is surprising if one takes into consideration that, in contrast to common patterns of incorporation, the lexical suffixes are bound elements with little, if any, resemblance to free-standing nouns with the same or similar meaning. This gives a more lexical flavor in lexical suffixation than true

\(^2\) There are two positions in the Salish literature with respect to lexical categories. According to the first one Salish languages are category neutral. Such languages do not show contrast between noun, adjective and verb as lexical categories. This view has been taken by Kuipers (1968), Hukari (1976), Kinkade (1983), Jelinek and Demers (1982, 1994), and many others. On the other hand, some scholars (among others, Van Eijk and Hess 1986, Demirdache and Matthewson 1995, Davis and Matthewson 1997, Davis, Demirdache and Matthewson in prep.) argue in favor of a three-way distinction in the syntax between NPs, APs and VPs. In this thesis, I take no position on the question whether Salish languages distinguish lexically between nouns and verbs. The terms ‘noun’, ‘adjective’ and ‘verb’ are used loosely.

\(^3\) There are also lexical suffixes that function as classifiers. Often these suffixes are translated into English with noun-like meanings. Constructions with such suffixes are named Root=LexS compounds as opposed to the Root=LexS predicates discussed here (CWB 1996). The two constructions exhibit not only morphological but also accentual differences, as I will show later in this chapter.
noun incorporation. There is historical evidence which suggests that lexical suffixes used to be free morphological constituents. Studies such as Egesdal (1981), Mattina (1987) and Carlson (1990) suggest that lexical suffixes in all likelihood originated as nominals that commonly occur as the second element in incorporated constructions. They were phonologically reduced, and eventually became bound forms.4

If lexical suffixes are elements which are incorporated to the root, they must have a thematic role. Indeed, lexical suffixes can express an object undergoing motion or change, or the object towards which the activity of an event is directed. They can also express location towards which an event is directed or the object by means of which an activity is effected. In other words, lexical suffixes appear to serve as independent arguments within the context of the entire sentence in which the Root=LexS constituent takes a predicate-like role. Some examples with Root=LexS predicates from Thompson and Moses-Columbia Salish (henceforth MC in the examples) are given in (3). The sources for these examples are Thompson and Thompson (1996) (henceforth Th in the examples) and CWB (1996).

(3) *root-lexical suffix relations*
   a. kʷén=kn’ ‘grab (s.o.) by the back (of clothes)’
      ν\text{grasp}=\text{back} (/kʷén/, /=íkn’/) (Th 115)
   b. n/paw’=íkn’ ‘get a layer of ice on top’
      LOC/v\text{freeze}=\text{top} (/paw’, /=íkn’/) (Th 228)
   c. tákʷ=eyek’ ‘lower (s.t., s.o.) with a rope’
      ν\text{lower}=\text{rope} (/tákʷ/, /=eyek’/) (Th 341)
   d. n/páw’=ymxʷ ‘the ground is frozen’
      LOC/v\text{freeze}=\text{ground} (/páw’, /=uymxʷ/) (Th 228)
   e. cök=xön ‘get foot chopped or cut’
      ν\text{hew}=\text{foot} (/cök/, /=xön/) (Th 23)
   f. mokʷ?=ús-m ‘cover one’s face’
      ν\text{wrap}=\text{face-MIDDLE} (/mokʷ/, /=ús/) (Th 197)
   g. yóyʷ=ákst kn ‘I used a lot of force with my hand’
      ν\text{force}=\text{hand 1sgS} (/yóyʷ/, /=akst/) (CWB 32)

4 Lexical suffixes are not an idiosyncrasy of the Salishan languages. Wakashan and other northwestern Native American languages are well-known for their lexical suffixes (Gerds 1998).
The claim I put forward is that stress in these examples is compositional in exactly the same way as in fusional languages like Greek and Russian. Moreover, the function that maps morphological structure into prosodic structure assigns prominence to the root, which is the constituent into which the lexical suffix incorporates and consequently, is the head of the construction.

Indeed, focusing on the first four examples, one observes that the root /kʷen/ accentually prevails over the suffix /ɪkn'/ unlike the root /paw'/. Assume at present that both constituents in (3a) are marked as opposed to (3b) in which only the suffix is marked. The generalization is that a marked root prevails over a marked lexical suffix. This is expected under the theory of prosodic compositionality and head dominance: lexical suffixes are complements that satisfy an internal argument of the root/head, therefore they can never attract stress away from a root.

The default assigns prominence to the leftmost full vowel (3d) or the rightmost schwa (3e). If there is only one full vowel in the word, this vowel is stressed, even when it is not the leftmost one in the word (3f-g).

The picture is somewhat different in the domain of morphological word in which grammatical suffixation takes place. Here stress is on the root unless a plural or an intransitive marker (e.g., aspectual marker, modal marker, reflexive or reciprocal suffix) are present. Then, stress is on the plural or the intransitive suffix.

The examples in (4) illustrate some transitive formations. The transitivizer is the vowelless morpheme /-t/. The root is stressed, even when it is unmarked. The example (4b) from Moses-Columbia is revealing. Here we expect the rightmost vowel to bear stress by default because the root is unmarked. This expectation is, however, not fulfilled. Stress outside the root is tolerated only when the root lacks a (full) vowel (4c-d). The picture is somewhat different when the suffix /-íyx/, which marks number, follows the root. In this case, stress is on the number marker (4e-f). The examples are drawn from Thompson and Thompson (1992) (henceforth Th&Th in the examples) and Czaykowska-Higgins 1993a (henceforth CH in the examples).

(4) transitive paradigm
   a. kíc-n-t-im-n  ‘visit-DR-TR-2pLO-1sgS’ (Th&Th 65)
   b. kʷúln-n-t-sa-xʷ-ta?  ‘lend-CTR-TR-1sgO-2sgS-IMP’ (CH 208)

5 The default algorithm in Thompson stresses the leftmost full vowel; otherwise, the rightmost schwa. The mirror image of this rule is the default case for Moses-Columbia: stress the rightmost full vowel, otherwise the leftmost schwa. Lillooet Salish is a foot-based system with a three-syllable limitation. The details of the phonological principles of each system are given in the following sections.
c. _solk-n-t-úym-n ‘turn-DR-TR-2pIO-1sgS’ (Th&Th 65)
d.  sac/sol-p-míx ‘STAT/round-INCH-IMPERF’ (CH 241)
e.  wik-t-íyxs ‘they see him’ (Th&Th 80)
f.  k‘wenme-t-íyxs ‘they judge him’ (Th&Th 80)

In intransitive formations, aspectual and modal suffixes (5a-d) as well as reflexives (5e) and reciprocals (5f) attract stress from other constituents of the word. The examples are from the Thompson language (Thompson and Thompson 1996).

(5)  

intransitive paradigm

a.  paq’-úulu ‘travel to see (s.t.)’ (Th 226)  

\[ watch-TRANSLOC(ASP) \]

b.  p’en’t-ím ‘take (s.t.) somewhere and back’ (Th 254)  

\[ return-IT \]

c.  piye?-l-níx ‘(we) made it through the year’ (Th 242)  

\[ one-PERSEV \]

d.  piye?-wiíx ‘unite’ (Th 242)  

\[ one-DVL \]

e.  kon-c-cút ‘help oneself’ (Th 90)  

\[ help-CAUS-TR-RFL \]

f.  cun-t-wáx ‘say to each other’ (Th 41)  

\[ say-TR-REC \]

The question that arises now is whether the prosodic patterns in the above morphological constructions can be accounted for in terms of the theory of head dominance. The answer is that indeed the theory of head dominance is the right approach to analyze the Salish facts of word morphology.

The proposal is that in the above constructions, aspectual and modal morphemes are functional heads in the morphosyntactic structure. Similarly, in transitive formations the transitivizer /-t/ is the head but since this morpheme lacks a vowel, stress is on the immediately lower head, namely the root. Interestingly, when the transitivizer is followed by the number marker /-iyxs/, which heads its own projection, stress moves to this morpheme. The object and subject suffixes are just complements of the predicate and hence powerless with respect to stress.

In short, prosodic dominance emanates from the status which a constituent holds in the syntactic tree. Once again the syntactic organization of the word is projected onto the prosody: the constituent that occupies the most important
position in the structure is prosodically highlighted. It is evident that morphosyntactic structure interacts with prosodic structure in polysynthetic languages in a way that is analogous to the prosody-morphology interface in fusional languages.

An advantage of the approach offered here is that it dispenses with unmotivated distinctions of suffixes into cyclic and non-cyclic groups and, moreover, predicts ‘cyclic effects’ from morphological headedness. Only head-constituents display cyclic behavior in these languages. Roots are stressed in transitive constructions, contra to the demands of the default prominence, simply because they are heads structurally. Similarly, lexical and personal suffixes (e.g. objects, subjects) are ineffective for stress not because of an arbitrary label that dubs them as ‘non-cyclic’ constituents, but because they can never be heads.

This chapter is interesting for another reason. It examines three closely affiliated systems that share common ground with respect to the morphological dependencies of stress but which are radically divergent in some phonological properties. More specifically, all four languages examined here have compositional stress with the head element of the word being prosodically dominant but their default algorithm is entirely different. Lillooet, as opposed to its sister languages, is a foot-based system with a three-syllable-window. This divergence gives us the chance to explore whether phonological factors can influence or restrict the patterns imposed by morphological structure, and perhaps contemplate the possible direction the system takes when phonological conditions start outranking morphological ones.

This chapter makes three significant claims. First, Salish languages are mixed-stress systems. They are ‘head-dependent systems with lexical accents’ at the stem level, in which derivation is mostly lexically based. They are, however, ‘head-stress systems with lexical accents’ at the level of the word, in which derivation results from pure syntactic operations. Second, prosodic compositionality and head dominance are the basic principles controlling accentuation. Rhythmic factors intervene to highlight or obscure marked patterns. Third, because of the compositional nature of stress in this systems, cyclic effects can be predicted from the morphosyntactic structure.

The ideas sketched here are presented in the following order: stem morphology is the subject of the first part of this chapter. In §5.2, I present the data of lexical suffixation from Thompson Salish and the analysis. The subject of §5.3 and §5.4 is stress-assignment in Spokane and Moses-Columbia Salish, and Lillooet Salish, respectively. A summary of the accentuation in lexical suffixation is presented in §5.5.
Stress in the morphological word and more specifically, in transitive and intransitive formations, is the focus of §5.6 and §5.7, respectively. An alternative analysis to Salish stress is presented in §5.8. A general discussion and an assessment of the framework proposed here are provided in §5.9.

The Morphological Stem

The first part of this chapter is concerned with accentual phenomena that take place within the domain of the stem. As mentioned in the introduction, this is the domain in which morphological rules apply. Many derivational processes take place within the domain of the morphological stem but only two will be examined here, namely lexical suffixation and compounding. Within the stem one can also find locative and reduplicative prefixes and infixes that express inchoative secondary aspect. Although these phenomena have their own value, they fall more within the scope of prosodic morphology, and are therefore not examined in this study.

Lexical suffixation is the process in which a root is combined with a lexical suffix. Lexical suffixes are bound morphemes with primarily lexical rather than grammatical meaning. Most lexical suffixes refer to nominal concepts, with the largest class consisting of body part suffixes. Two types of words are formed by the combination of a root with a lexical suffix: Root=LexS compounds and Root=LexS predicates. The former words express modifier-head relations, whereas the latter express head-complement relations. The structural difference between the two types of lexical suffixation is also reflected in stress. In predicate formations, roots are heads and are accentually dominant. In compound formations, on the other hand, roots function as modifiers of the meaning expressed by the lexical suffix and are accentually weak.

Root-Root compounding is less frequent in Salish languages. In this type of compounding, two roots (and not a root and a lexical suffix) are joined together to form a complex unit. In most cases the second element is an independent word (rather than just a root). There is often a compounding connective which joins the two constituents. Stress in compounds is pursued in the same way as stress in Root=LexS compounds.

In order to preserve the transparency of the morphologically complex forms of Salish, I adopt the following practice: I give the underlying representation of the forms, often abstracting from the phonological processes of consonant merging and vowel deletion. To illustrate with an example, the form /qıy-xit-wa-s/ is given for what in the surface is pronounced as [q’ıyixitus] ‘he writes to him’ in Moses-Columbia. This form results after (unstressed) vowel deletion and
vocalization of the glide /w/ have been applied. Vowel reduction is not indicated in all examples. I adopt the practice of the Thompson River Salish Dictionary and indicate vowel reduction in \( k^{\text{'en}}=kn' < /k^{\text{'en}}=\text{i}kn'/ \) but not in \( k^{\text{'en}}=\text{cin} \). The phonetic form of the latter example, namely \([k^{\text{'enc}}]\), is not very informative because it does not show the exact prosodic shape of the suffix. The adopted notational practice primarily aims at enhancing the comprehension of the complicated morphological structure of Salish words. A list of the most important phonological processes is presented in the introductory section of each language.

5.2. Thompson Salish (Nleʔképmx)

After a brief introduction to the main morphological and phonological characteristics of Thompson (§5.2.1), I present some examples of lexical suffixation (§5.2.2). An examination of the empirical facts leads to the conclusion that there is a split in the accentual behavior of Root=LexS formations. A closer look at the internal constituency of these constructions reveals that stress reflects the structural difference between Root=LexS formations that are predicates and Root=LexS formations that are compounds (§5.2.3). The former is a type of incorporated construction where the lexical suffix is a complement to the root. The latter is a type of compound formation where the lexical suffix expresses a noun meaning that is modified by the root. The rest of the section analyses the accentual patterns of incorporated constructions (§5.2.4) based on the theory of head dominance (§5.2.5). Words that fall outside the scope of head dominance, namely words that lack inherent accents, are accounted for in §5.2.6.

5.2.1. Background information on Thompson

Thompson is one of the 23 Salish languages, a member of the Northern Interior subgroup of the Interior branch family. Its closest relatives are Shuswap and Lillooet. The Thompson Indians of southern British Columbia take their name after the Thompson river gorge. There is no native name that properly covers the speech community as a whole, although Nleʔképmx is sometimes used for this purpose. The sources for Thompson are the grammar and the dictionary compiled by Thompson and Thompson (1992, 1996).

As many Salish languages, Thompson has a large consonant inventory and a small vowel inventory.
The primary vowels are /i, u, e, o/; the others are retracted counterparts, which are less common and to some extent automatic variants of primary vowels. /a/ is the retracted counterpart of /e/ and /o/ is the retracted counterpart of /u/. Vowels are homorganic to certain consonants: /i/ to /y/, /u/ to /w/, /e/ to /l/ and /h/, /a/ to /s/ and /o/ to /z/. Before semi-vowels, laryngeals and pharyngeals, /a/ is converted to the homorganic vowel, e.g. /a/ > /a/ (liquid) flows, /es/ > /es/ ‘it is dragged’ (Th&Th 30), and so on.

Thompson and Thompson (1992:21) claim that “stress manifests itself as a complex of loudness, force and pitch differences.” Moreover, Thompson displays all the characteristics of an unbounded system. Stress is not limited to any particular edge of the word, as indicated by examples such as "hēy=sk‘iʔ-(e)-o-s ‘gradually stop the music’ (Th 79), k’ax’om-t-ēs ‘he preaches to them’ (Th&Th 32), and stress related phenomena are not foot-based.

There is a general tendency in the language to drop vowels from unstressed syllables wherever possible, and to convert to /a/ those vowels that are not dropped, e.g. k’ax’om-t-ēs > k’ax’om-t-ēs ‘he preaches to them’, k’wínex=ék‘iʔ > k’wínex=ék‘iʔ ‘how many carcasses?’ (Th&Th 32). Vowel deletion seems to
be conditioned by constraints on syllable shapes, but since an extended study of Thompson is needed to confirm this hypothesis, I simply provide descriptive statements of the processes here. It is worth mentioning that /s/ does not always represent a reduction of other vowels under weak stress. It has a phonemic status as well. This is shown by the fact that it can bear a lexical accent, e.g. m\spect;\‘blackcap fruit’, ġestw\spec\el; ‘(brush) is cleared away’ (Th&Th 20).

Vowel loss is the trigger of cluster coalescence or simplification. The sequence /ts/ coalesces to /c/ whereas in the cluster /cs/ develops to /c/ after loss of /s/. Finally, some resonants become syllabic between other consonants and in word final position after a consonant. When this happens, it is common for syllabic /n/ to vocalize before homorganic obstruents to /l/, e.g. s\spect;k-n-t-és > s\spect;k-n-t-és > s\spect;k-e-t-és ‘he whirls her around’ (Th&Th 43).

Roots in Thompson are of various shapes, the overwhelming majority conform to a few basic canons or typical shapes given in (7).

(7) canonical shapes of roots

<table>
<thead>
<tr>
<th>CVC(C)</th>
<th>CC</th>
<th>C\spect;C</th>
<th>C\spect;C(C)VC</th>
</tr>
</thead>
<tbody>
<tr>
<td>k\spect;ís ‘fall’</td>
<td>k’c’ ‘crosswise’</td>
<td>c\spect;w ‘do’</td>
<td>p\spect;zén ‘meet’</td>
</tr>
<tr>
<td>CVC(C)VC</td>
<td>C\spect;h</td>
<td>C\spect;C(C)\spect;C</td>
<td>CVC(C)\spect;C</td>
</tr>
<tr>
<td>mé\spect;xah⁶ ‘girl’</td>
<td>c\spect;h ‘lay-long’</td>
<td>s\spect;k ‘whirl’</td>
<td>p’é\spect;yq ‘spread out’</td>
</tr>
</tbody>
</table>

There is a large stock of lexical suffixes of the following shape:

(8) canonical shapes of lexical suffixes

<table>
<thead>
<tr>
<th>VC</th>
<th>VCC</th>
<th>VCVC</th>
<th>VCCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>=ap ‘bottom’</td>
<td>=ayk ‘rope’</td>
<td>=inek ‘star’</td>
<td>=a\spect;x\spect;wck ‘chest’</td>
</tr>
<tr>
<td>CVC</td>
<td>CCV(C)</td>
<td>CCVCC</td>
<td></td>
</tr>
<tr>
<td>=cin ‘mouth’</td>
<td>=xwey ‘trail’</td>
<td>=szen\spect;x ‘year’</td>
<td></td>
</tr>
<tr>
<td>C\spect;C\spect;C</td>
<td>C\spect;C</td>
<td>\spect;CVCC</td>
<td></td>
</tr>
<tr>
<td>=lt\spect;n ‘harvest’</td>
<td>=t\spect;m ‘inside’</td>
<td>=w’eck ‘bonus’</td>
<td></td>
</tr>
</tbody>
</table>

These preliminary remarks will assist our understanding of the Thompson examples to follow. When necessary, additional processes will be discussed.

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⁶ Retraction in consonant and vowels is represented as follows: CV.
5.2.2. The Thompson facts

Like many languages of the Interior branch of the Salish language family, Thompson has a highly complex system of stress assignment. In the data in (9) stress does not fall consistently on any one syllable (e.g. ultimate, penultimate, etc.) or on any one morpheme in a word. All the examples in this section are taken from the Thompson River Salish Dictionary compiled by Thompson and Thompson (1996).

(9) a. p’áqʷel  ‘scaffold’ (cf. p’aqʷel=qín) (Th 252)
b. qʼolxʷ-šm  ‘curl (s.t.)’ (Th 278)
c. pɨʔúps  ‘eight’ (Th 239)
   sipʼéc  ‘skin’ (Th 327)
   pʼs̸šk’eʔ  ‘hummingbird’ (Th 257)
d. qayt=íkn’  ‘go gradually along ridge to the very top’
   vreach=ridge (Th 265)
   kʷén=kn’  ‘grab (s.o.) by the back (of clothes)’ (Th 115)
   vgrasp=back
   n/qʷec=íkn’  ‘one’s back is warm’
   vwarm=back (Th 290)

In previous accounts of Salish accentuation (cf. for Spokane, Carlson 1972, 1990; for Lillooet, Van Eijk 1985; for Shuswap, Kuipers 1974, among others), it has been claimed that the position of primary stress is affected by idiosyncratic stress properties of morphemes. More specifically, it has been proposed that roots and suffixes are divided into three classes: strong, variable and weak. Surface stress is primarily determined by a morphological stress hierarchy which is roughly as follows: strong suffix > strong root > variable suffix > variable root > weak root > weak suffix. In any word, the highest morpheme in the hierarchy is the one to receive primary stress. To illustrate with an example, according to the aforementioned proposal the lexical suffix /=íkn’/ is variable; it attracts stress from a weak root but loses stress after a strong one, as is shown in (9d).

Here I propose an account that makes use of an analogous notion of hierarchically ordered preferences. However, the fundamental difference is that the hierarchy is not an idiosyncratic property of morphemes. It is imposed by the hierarchical relations between morphological constituents as these are established by morphosyntactic rules. More specifically, I argue that some morphemes are marked with a lexical accent whereas others are not. Besides
marking, however, the role each constituent has in the structure is decisive for its prosodic dominance. But let us take things from the beginning and have a careful look at some more examples.

In (10) some examples with lexical suffixes are listed. Examples (10a) and (10c) are both stressed on the root whereas (10b) has stress on the suffix. It seems that the difference between the aforementioned pairs relies on the quality of their (underlying) vowels. (10a) has two full vowels underlyingly and stress on the leftmost one. (10b) has to two schwas and stress on the rightmost one. (10c) has a root with a full vowel and a suffix with a schwa; stress here is located on the full vowel of the root. I conclude from the examples in (10) that, other factors aside, the following generalization holds for Thompson: stress is on the leftmost full vowel, otherwise on the rightmost schwa.

(10) a. n/páw’=ymxʷ ‘the ground is frozen’
   LOC/ freezes=ground (/páw’, /=uym’xʷ/) (Th 228)

b. cɔk=xɔn ‘get foot chopped or cut’
   /hew=foot (/cɔk/, /=xɔn/) (Th 23)

c. qʷúl=xn ‘get a blister on one’s foot’
   /blister=foot (/qʷúl/, /=xɔn/) (Th 301)

The picture is somewhat different in (11) which presents some more examples of Root=LexS derivations, all with full vowels. These examples will help us test the generalization drawn in the above paragraph. The words in (11a) show once more that the leftmost vowel is stressed. Problematic for this hypothesis, however, are the examples in (11b). Here stress is on the suffix, although the root has a full vowel.

(11) a. πi=x=qn ‘lay (boards) on top (of s.t.)’
   /lay-parallel=top (/pi=x, /=qin/) (Th 241)
   kʷéñ=kn’ ‘grab s.o. by the back (of clothes)’
   /grasp=back (/kʷéñ/, /=ikn’/) (Th 115)

b. n/páw’=íkn’ ‘get a layer of ice on top’
   LOC/ freezes=top (/páw’, /=íkn’/) (Th 228)
   qayt=qín ‘reach the top’
   /reach=top (/qayt/, /=qin/)
One way to explain the stress patterns in (11b) is to assume that roots such as /qayt/ are extrametrical. This solution, however, fails because in transitive paradigms the root is accented, e.g. qáyt-s-t-ô-es ‘take somebody on the top’. Moreover, the proposal implies that the extrametricality of the root would have to be canceled when it is preceded by a prefix. Thus, different stress patterns would arise, depending on whether the root is accompanied by a prefix or not. However, this is not empirically correct in Thompson or any other of the Salish languages examined here.

Another possible explanation is to assume that the lexical suffixes in (11b) are marked; they have an inherent accent that attracts stress. Under this proposal we have to find out in which contexts the accent of the suffix surfaces with primary stress.

A more careful look at (11) reveals that, if the lexical suffixes /=qí'n/ and /=ík'n/' are accented, their accent surfaces only with roots that lack lexical accents such as the roots in (11b). We conclude, therefore, that the roots /píx/ and /k'wén/ in (11a) must be accented because they accentually prevail over the suffix. 7 In sum, the stress algorithm for the Thompson words is as follows:

\[
\text{(12) stress-rule for Thompson lexical suffixation (I)}
\]

a. stress an accented root; if there is no marked root, stress an accented lexical suffix.

b. if there are no marked morphemes at all in a word, stress the leftmost full vowel, otherwise the rightmost schwa.

The only chance an unmarked suffix such as /=uym’xw/ has to reveal its accent is when it is combined with an accentless or a vowelless root, as in (13).

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7 Accented morphemes will be represented with an acute accent in their underlying forms, /k'wén/, /=ík'n/. It is tedious to provide evidence for the accential status of each one of the morphemes presented here, therefore sometimes the accentedness of a constituent will be taken for granted. The reference numbers given to the right of the examples can always help the reader to find the corresponding entry in the dictionary and check the validity of the claims. More on the representation of marked morphemes is given in §5.2.4.
The examination of stress patterns has not yet been completed. In the dictionary, I found the following group of data which contradicts both statements of the stress-rule in (12). The lexical suffix is stressed regardless the shape or the accentual status of the root. For instance, in (14a) the root has a schwa and in (14b) and (14c) the roots are accentless and accented, respectively. More importantly, the lexical suffix is stressed even when it is unmarked as, for example, the suffix /-uy=x/ in (14b), or when it has a schwa, as for example, the suffix /-xan/ in (14b-c).

(14) a. pi?k=xán ‘dust from wheels (of vehicle)’
    VSфан=dust, wheel (/p.ʃək ’n/; /=xan/) (Th 239)

b. s/xen’x=x=uy’mx ‘Rocky Mountains’
    NOM=rock=ground (/xen’x ’n/; /=uy’mx/) (Th 391)
    λ’ix=x=xán ‘different shoes’
    Vdifferent=shoe (/λ’ix ’’nl/; /=xan/) (Th 182)
    p’uλ’=qín ‘misty, foggy on top of the mountain’
    Vmisty=top (/p’uλ’/; /=qín/) (Th 261)

c. sip’ec’=qín ‘scalp (animal or person)’
    Vskin=head (/sip’éc’/; /=qín/) (Th 327)
    n/q’ec=ikn’ ‘one’s back is warm’
    LOC=warm=back (/q ’éc’/; /=ikn/) (Th 290)

8 Here the Root=LexS predicate has undergone further derivation. The suffix /-tan/ as well as the suffix /-min/ create words denoting instruments, implements and related notions (Thompson and Thompson 1992). It is puzzling that such clearly derivational suffixes are not prosodically dominant in any Salish language. Further investigation will shed some light on their prosodic as well as morphological status.

9 The roots in (14c) are considered to be accented because, when in isolation, they are stressed on the final vowel and not on the leftmost one, as predicted by the default.
It seems that for the words in (14) a simpler stress rule is at play, namely stress the rightmost vowel (or the rightmost element). This rule is given in (15).

(15) \textit{stress-rule for Thompson lexical suffixation (II)}
\begin{itemize}
    \item Stress the rightmost vowel (or the rightmost morpheme).
\end{itemize}

The central task of the analysis is to explain the split in the Thompson lexicon. Are there two ‘stress-rules’ and part of the vocabulary chooses one or the other, or is there something more fundamental in the process of accentuation that escaped our attention?

Let us adopt for the moment the first hypothesis by assuming that there is a split in stress assignment; some roots are marked to follow the algorithm in (12) whereas some others follow the algorithm in (15). Under this proposal, it is predicted that there are no roots that follow both stress rules. However, the examples in (16) falsify this prediction.

(16) a. \[ q^w\acute{e}c=n^i-tn \]
\[ \texttt{\textbackslash v\textbackslash warm=ear-INSTR} \]
\[ (q^w\acute{e}c, /=en^i/) \]
\[ \text{‘thing to keep the ears warm, ear-muffs’} \]
\[ q^w\acute{e}c=\acute{u}ym^xw \]
\[ \texttt{\textbackslash v\textbackslash warm=area, land} \]
\[ (q^w\acute{e}c, /=uym^x/) \]
\[ \text{(Th 290)} \]

b. \[ p^\acute{u}\ddot{\lambda}=s \]
\[ \texttt{\textbackslash v\textbackslash smoke=face} \]
\[ (p^\acute{u}\ddot{\lambda}, /=us/) \]
\[ \text{‘blow smoke in s.o.’s face’} \]
\[ s/p^\acute{u}\ddot{\lambda}=\acute{u}ym^xw \]
\[ \texttt{\textbackslash NOM \textbackslash v\textbackslash haze=ground} \]
\[ (p^\acute{u}\ddot{\lambda}, /=uym^x/) \]
\[ \text{(Th 261)} \]

The above examples show that the same (accented/unmarked) root can follow different stress rules. An additional problem raised by the idea of split-lexicon is that it implies a very complex mechanism of marking in which each morpheme has to be specified as belonging to group A (algorithm (12)) or group B (algorithm (15)). Within the framework of Optimality Theory one way to encode this split is by having a grammar with two rankings each one of accounting for the attested stress patterns (cf. Inkelas 1994, Anttila 1995, 1997
and Chapter 2 for a discussion on variation in grammar). Although such parametric approaches have been forwarded by scholars, this is perhaps not the best way to account for the Thompson facts.

Instead I attribute the stress difference between the two groups of words to their different morphological structure. Czaykowska–Higgins (1996) and CWB (1996) in a study on Moses-Columbia lexical suffixes, argue that there are two forms of lexical suffixation. Firstly, there are lexical suffixes that take on the role of a theme or patient of the root or satisfy an argument of the root. These types of forms are referred as Root=LexS predicates. In these cases the lexical suffix functions as an incorporated noun. Secondly, there are forms in which the lexical suffixes take on ‘abstract’ meanings and very often function as classifiers. These forms are called Root=LexS compounds.

Some of the diagnostic criteria for the predicative function of the derived component as well as the incorporated nature of the lexical suffix are whether or not the lexical suffix assumes theme, locative, instrument and perhaps agent roles. Transitivity is another criterion; the Root=LexS component may be either transitive or intransitive. Moreover, certain types of noun incorporation have been argued to allow doubling (i.e. the presence of an overt NP coreferential with the incorporated noun) (Baker 1988, 1996). Salish languages in general allow an independent nominal to be coreferential under certain conditions (e.g., if the independent nominal is marked as oblique). Root=LexS components that do not meet any of these criteria are compound forms and not predicates.

In the following section, I establish that there are lexical suffixes which function as incorporated elements and lexical suffixes which function as the second element of a compound. After drawing this distinction, I claim that the different status of lexical suffixes in the morphological structure has an impact on stress.

5.2.3. Incorporation and compounding in lexical suffixation

5.2.3.1. Root=LexS predicates

The first property of Root=LexS predicates that we focus on involves the thematic interpretations assumed by lexical suffixes in such constructions. Lexical suffixes in Salish languages in general, and in Thompson in particular, can be semantically interpreted as themes, locatives or instruments (CWB 1996, Gerdts 1998).10 Because the papers on Salish incorporation do not directly deal

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10 CWB (1996) argue that, marginally, lexical suffixes can take on an agent role, as shown in (i). Baker (1996) argues that incorporation of agent roles is not a characteristic of true noun incorporating languages. Obviously, this issue calls for further examination.
with Thompson, I often include examples from Moses-Columbia Salish in order to strengthen the point made here and to clarify the argument.

CWB (1996) define the theme role as the relation representing an object undergoing motion or change. Some examples with the lexical suffix marked as direct argument are given in (17).

(17)  
**lexical suffix-theme**

a. qʷéç=n’i-tn  ‘thing to keep the ears warm, ear-muffs’  
   warm=ear-INSTR (/qʷéç/, /=en’i/) (Th 290)

b. cëk=xän  ‘get foot chopped or cut’  
   hew=foot (/cëk/, /=xän/) (Th 23)

c. hëy=sk’i?  ‘stop singing’  
   pause=song (/hëy/, /=esk’i/) (Th 79)

d. nék’=lëw  ‘change roof’  
   change=house, roof (/nék’, /=elë/) (Th 213)

e. k’it’=âlp  ‘cut down tree’  
   cut=tree (MC, CWB 1996:34)

The locative thematic role is defined as the thematic relation expressing location towards which an event is directed, or the location in which an event/object is situated.

(18)  
**lexical suffix-locative**

a. n/påw’=ymxʷ  ‘the ground is frozen’  
   LOC/freeze=ground (/påw’, /=uym’x/) (Th 228)

b. ?es-n tüz=ymxʷ  ‘bent down to the ground’  
   STAT-LOC/stoop=ground (/tüz/, /=uym’x/) (Th 361)

c. n/xéá’=k’u-n-ø-es  ‘skim (s.t.) off water’  
   LOC/skim off=water (/xéá’, /=etk’u/) (Th 391)

In sentences with parallel meanings but with independent nominals instead of lexical suffixes, the nominal is marked as an oblique rather than direct argument. This is illustrated with the example in (19) from Moses-Columbia. The locative preposition precedes the word ?acp’áá’ ‘tree’:

(i)  
   xʷay’-əm-ált  ?ací  Linda  ‘Linda’s child ran away’  
   run away-MIDDLE=child  DEM  Linda (MC, CWB 1996:32)
The thematic role of instrument is used to refer to objects which are the means by which an activity is effected. I found only one example in Thompson with the lexical suffix in an instrument role. However, other Salish languages such as Halkomelem (Gerdts 1998) and Moses-Columbia (CWB 1996) offer more examples.

(20) lexical suffix-instrument

a. táxʷ=yeq’ ‘lower (s.t, s.o.) with a rope’ (Thompson)

b. yeq’=ákst kn ‘I used a lot of force with my hand’ (MC)

There are more factors supporting the incorporated nature of lexical suffixes in Root=LexS predicate constructions. Unfortunately, the Thompson grammar (Thompson and Thompson 1992), which constitutes the main source for the data presented here, offers very little information with respect to this phenomenon. In fact, it provides only one example. For this reason, I strictly follow CWB’s (1996) paper on Moses-Columbia Salish lexical suffixation. In the discussion that follows, most examples are taken from their research. It must be emphasized that there is very little divergence among the Salish languages on this issue. This is also verified by Gerdts’s (1998) study on lexical suffixation in Salish languages. Besides, the main goal of this section is not to provide an exhaustive analysis of incorporation but to offer a description of the facts that will help us understand the difference between the predicative and compounding function of Root=LexS constructions.

The data from Moses-Columbia and Thompson shows that the Root=LexS predicate that takes on a theme role may surface as intransitive or as transitive. Some examples of intransitive predicates are given in (21a). In intransitive predicates, which are also called inactive predicates, an incorporated element can also serve as the notational subject of the clause. An independent nominal,
which is semantically linked to the lexical suffix, can occur in the same clause with the intransitive predicate only when it is marked as ‘oblique’, as shown in (21b). The latter type of incorporation is often referred as ‘compound noun incorporation’ (Rosen 1989).

(21) **intransitive theme predicates**

a. cək=xɔn  k’n ‘I get foot chopped or cut’  
   k’it=álp  k’n ‘I cut down a tree’  
   /cut=tree 1sgS  
   (Thompson, 17b)

b. pu[p]n’=éw4  t’s  s/c’ɔq?=éw4  
   /find[Dim]=conveyance OBL  NOM/boat  
   ‘he found a boat’  
   (Thompson, Th&Th 147)

Mary tumist=álxw  t  s’tɔx’ɔx’ul  
Mary v’sell=house OBL  houses  
‘Mary sells houses’  
(MC, CWB 1996:34)

The Root=LexS predicate can also be marked as transitive (22a). In this case an independent nominal direct object is allowed which is, however, interpreted as the possessor of the lexical suffix, although it never surfaces with possessor morphology (22b). Transitives can also co-occur with a coreferent independent nominal which is marked as an oblique (22c).

(22) **transitive theme predicates**

a. hέy=sk’i?-(e)-∅-s  ‘stop singing’  
   /pause=song-TR-3O-3sgS  
   (Thompson, cf. 17c)

nék’=lxw’-e-∅-s  ‘put a new roof’  
   /change=roof-TR-3O-3sgS  
   (Thompson, cf. 17d)

b. k’it=álp-t-∅-n  John  ‘I cut down John’s tree’  
   /cut=tree-TR-3O-1sgS  John  
   (MC, CWB 1996:34)

c. k’it=álp-t-∅-n  John  t  c’ɔq?=álp-s  
   /cut=tree-TR-3O-1sgS  John  OBL  /fir=tree-his  
   ‘I cut down John’s fir tree’  
   (MC, CWB 1996:34)

11 Gerdts (1998:96) claims that Halkomelem Salish does not allow doubling with a free-standing noun of the same or more specific meaning.
Predicates which contain a locative or instrument lexical suffix can surface as intransitive (23a) or transitive (23b). An independent nominal can co-occur with a corresponding lexical suffix only if it is marked as oblique (23c).

(23)  

intransitive locative/instrument predicates

a. n/páw’=ymxʷ ‘the ground is frozen’  
   xʷir=xn-m ‘reach out a/the foot’  
   v/reach out=foot-MIDDLE  
   (Thompson, cf. 18a)

b. n/xéʔʷ=kʷu-e-∅-es ‘skim s.t. off water’  
   LOC/vskim off=water-TR-3O-3sgS  
   táxʷ=yek’-e-∅-es ‘lower s.t. s.o with a rope’  
   v/lower=rope-TR-3O-3sgS  
   (Thompson, cf. 18c)

c. yóʔʷ=ákst-min-∅-n  
   v/force=hand-REL-3O-1sgS OBL 1sgPOSS-hand  
   ‘I used force on it with my hand [...]’  
   (MC, CWB 1996:35)

One of the issues often discussed in the literature of noun incorporation concerns the question of whether or not incorporated nouns can be interpreted as referential in meaning. CWB (1996: 15-16) argue that speakers of Moses-Columbia Salish can interpret lexical suffixes in both types of constructions (i.e. theme and locative/instrument) as being coreferential with a corresponding independent nominal or pronominal in the sentence (24a) or with an independent nominal in a preceding clause (24b).

(24)  

referentiality

a. kn q’il=əlqʷp kʷaʔ  
   1sgS v/hurt=throat and v/rub=REL-CAUS-3O-1sgS  
   ‘My throat hurts and I am rubbing it;’

b. q’ilt ?in-ʔpʰuʔ kʷaʔ  
   kn mín=əlqʷp-m  
   hurt POSS-ʔthroat and 1sgS v/rub=throat-MIDDLE  
   ‘My throat hurts and I am rubbing it.’

To summarize, the constructions cited here serve as the predicate of the clause, and the lexical suffix corresponds to one of the arguments of the verb. More specifically, the lexical suffix corresponds to the object of the transitive predicate or to an oblique nominal such as locative or instrument. Often an
independent nominal occurs in the same sentence with the predicate, which further specifies or extends the meaning of the lexical suffix. There are also reasons to believe that lexical suffixes can be coreferential with an independent nominal or pronominal of the same or a previous clause.

We conclude, therefore, that lexical suffixes exhibit the basic properties of noun incorporation. The only difference with real noun incorporation is that the lexical suffix is a bound and not a free-standing element, which always appears to be attached to a root. Carlson (1990) has argued that lexical suffixes originated as nominals that commonly occurred as the second element of compounds but they were phonologically reduced and ended up as bound forms. From this viewpoint, lexical suffixes can be regarded as incorporated nouns that have lost their status as free-standing nominals. However, it is important to keep in mind that lexical suffixation is a lexically predetermined type of syntactic operation. It is needed to establish the appropriate configuration in which complex expressions can be licensed.

In the next section I examine Root=LexS constructions that seem to be closer to compound forms. Moreover, I argue that the structural differences between the two constructions are also reflected in stress.

5.2.3.2. Root=LexS compounds

Lexical suffixes are widely used in complex nominals. In these cases they do not satisfy the argument structure of the root. On the contrary, it seems that the root they combine with operates as a modifier. Often the root functions as a modifier of the object or the event the lexical suffix designates, as in (25). It can also be a numeral or a quantifier, as in the examples in (26). It has already been mentioned that the lexical suffix here always hosts primary stress regardless of whether it is unmarked or accented, or it has a weak vowel (i.e. schwa). The accentual properties of roots are irrelevant for stress.

(25) modifier-head relation
a. piʔkʷ=xón
   ṣ/dustry=foot, wheel (/pɛ́ŋˈɛkʷ/, /=xən/) (Th 239)
   λˈixʷe=ʃ̄n
   ṣ/different=shoe (/λˈɛʃ̄/, /=xən/) (Th 182)
   s/weʔwit=xón
   NOM ˈbehind=foot (/we əˈwit/, /=xən/) (Th 372)
b. p’uƛ’=qín
   \[\text{\textit{\textbf{\textit{misty=\text{top}}}} / \text{\textit{p’uƛ’}, /=qín/}}\] (Th 261)
   ‘misty, foggy on top of the mountain’

   sip’éc’=qín
   \[\text{\textit{\textbf{\textit{skin=head}} / \text{\textit{sip’éc’}, /=qín/}}\] (Th 327)
   ‘scalp (animal or person)’

b. piye?= xón
   \[\text{\textit{\textbf{\textit{one=shoe}} / \text{\textit{piye}, /=xón/}}\] (Th 242)
   ‘one pair of footwear’

   ke?= xón
   \[\text{\textit{\textbf{\textit{three=shoe}} / \text{\textit{ke}, /=xón/}}\] (Th 83)
   ‘three shoes’

   xʷi?= t= xón
   \[\text{\textit{\textbf{\textit{many=footprint}} / \text{\textit{xʷi}, /=xón/}}\] (Th 409)
   ‘many footprints’

   kʷənex= xón
   \[\text{\textit{\textbf{\textit{how many=shoe}} / \text{\textit{k’ "ənex}, /=xón/}}\] (Th 132)
   ‘how many shoes?’

b. piye?=l=szénxʷ
   \[\text{\textit{\textbf{\textit{one=year}} / \text{\textit{piye}, /=szénxʷ/}}\] (Th 242)
   ‘one year old’

   ke?=l=szénxʷ
   \[\text{\textit{\textbf{\textit{three=year}} / \text{\textit{ke}, /=szénxʷ/}}\] (Th 83)
   ‘three years old’

   kʷənex=szénxʷ
   \[\text{\textit{\textbf{\textit{how many=years}} / \text{\textit{k’ "ənex}, /=szénxʷ/}}\] (Th 132)
   ‘how many years old?’

The examples are parallel to compound forms of the [root+root] type in which
the first constituent often functions as a modifier. 12 Some examples of
[root+root] compounding are listed in (27). Notice that stress is always on the
second element here as well.

12 Carlson (1990) argues that there are also compounds which combine a verbal member and a
nominal(ized) member to create a verbal predicate, e.g. xʷiʔ-e-s/qáxəʔ ‘look for horses’ (/xʷʔ/ ‘search for’, /s/qáxəʔ ‘horse’, /e/ connective of stems) (Th&Th 110).
It is evident from the above examples that there is a common stress rule for Root=LexS compounds and \([\text{root}_1+\text{root}_2]\) compounds. More importantly, they do not contradict the theory of head dominance advocated here. Stress reflects the internal constituency of these words. In both cases the modified constituent (i.e. lexical suffix or root\(_2\)), and not the modifier (i.e. root or root\(_1\)), is accentually prevalent.\(^{14}\) As CWB (1996) point out, lexical suffixes (and roots) in compound formations have noun-like meanings and the whole construction has a noun-like function in the sentence in which it occurs. Despite its fascinating aspects, compound stress has not been examined in the other languages of this study and I pay no further attention to it here either.

Before concluding this section, it is worth noting that there are structures with two lexical suffixes. In most cases the lexical suffixes form a compound with a specialized meaning. For instance, the complex form \(/=ep=qn/\) has the meaning ‘back of head, nape of neck’ and the form \(z\text{\textbar}nk=\acute{e}p=qn-me\) is translated as ‘twist and coil hair at back of head’ (Th 460). There are a few forms in which both lexical suffixes seem to be incorporated as in \(?es/p\text{\textbar}y=(u)s=(i)kn\) ‘carrying a smaller basket upside down on a larger basket’ (Th 249). In the aforementioned examples stress assignment follows the same steps as stress assignment in predicate formations with one lexical suffix.

\(^{13}\) These compounds resemble phrasal compounds in more familiar languages such as English, for example, motor-car, water-lily, sour-dough, etc.

\(^{14}\) Notice that modifiers never reduce their stressed vowels. For example, the root \(/\text{\textbar}l'p\acute{i}x/\) in \(\text{\textbar}l'p\acute{i}x=\acute{e}sk'i? < (\text{\textbar}l'p\acute{i}x, /=esk'?\textbar/)\) ‘slahal (game) song’ (25c) reduces the unstressed vowel but preserves the stressed one. This suggests that the accented syllable of the root has prominence and the whole root forms a prosodic word. We infer from this that the prosodic structure of Root=LexS compounds must be \([\text{root}_1,w[\text{LexS}],[w],w,\text{root}_1]\), where the head constituent (i.e. LexS) is more prominent than the non-head one (i.e. root) because it bears primary stress.
To summarize, I showed that lexical suffixes are combined with roots into types of constructions: a predicate and a compound one. The same suffix can form a predicate (qayt=qín ‘reach the top’) and a compound word (p’uñ=qín ‘misty top’). In the first one, the lexical suffix satisfies the argument structure of the root by being a complement and the whole construction has a predicative function in the clause. Stress in these forms is on the root, if marked, or on the marked lexical suffix, in the absence of a marked root. Otherwise, the default clause applies to assign stress to an edgemost vowel. In the second type, the Root=LexS component behaves more like a compound. The root is a modifier of the object or event expressed by the lexical suffix. Stress in these forms is exactly the same as in real [root+root] compounds.

Table (28) summarizes the stress patterns attested in incorporated and compound formations. The patterns in which the two structures accentually diverge are highlighted.

(28) accentual patterns of Root=LexS predicates and compounds

<table>
<thead>
<tr>
<th>input forms</th>
<th>Root=LexS predicate</th>
<th>Root=LexS compound</th>
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<tbody>
<tr>
<td>√CVC=CVC</td>
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<td>√CVC=CVC</td>
<td>CVC=CVC</td>
<td>CVC=CVC</td>
</tr>
<tr>
<td>√CVC=CVC</td>
<td>CVC=CVC</td>
<td>CVC=CVC</td>
</tr>
<tr>
<td>√CVC=CVC</td>
<td>CVC=CVC</td>
<td>CVC=CVC</td>
</tr>
<tr>
<td>√CVC=CVC</td>
<td>CVC=CVC</td>
<td>CVC=CVC</td>
</tr>
</tbody>
</table>

In the following sections I focus on Root=LexS predicate formations. The analysis is along the theory of head dominance advanced for lexical accent systems with fusional morphology. The head element in the construction is prosodically dominant, if accented; otherwise, stress is on other accented vowels of the word or edgemost vowels, according to the language’s default option.

5.2.4. Lexical marking

As proposed in Chapter 2, a lexical accent in this study is an abstract entity, an autosegment, which is sponsored by some morpheme and provides no cues as to its phonetic interpretation. We have also seen that lexical accents are usually associated with the morpheme they belong to, but this is not an obligatory condition. There are also floating lexical accents which are linked to a vocalic
peak during the process of accentuation. Finally, it has also been claimed that lexical marks can be ‘strong’ or ‘weak’. If the language is foot-based, ‘strong’ lexical accents surface as foot-heads and ‘weak’ lexical accents surface as foot-tails. Here I show that lexical marks in Thompson are also strong and weak. Strong accents surface with primary stress, if included in the prosodic organization of the word, whereas weak accents surface with weak prominence. That is to say, they have duration but no loudness.

Thompson has both marked roots and marked lexical suffixes. In §5.2.2, it has been shown that the accentedness of lexical suffixes is revealed in Root=LexS predicates when the lexical suffix is combined with an unmarked root. I repeat in (29) some of the examples discussed in that section.

(29)  unmarked root + accented LexS
  a. n/paw=īkn’ ‘get a layer of ice on top’
  b. qayt=qīn ‘reach top’ (cf. 11b)

On the other hand, there are also marked roots which attract stress from accented lexical suffixes:

(30)  accented root + accented LexS
  a. kʷén=kn’ ‘grab s.o. by the back (of clothes)’
  b. píx=qn ‘lay boards on top (of s.t.)’ (cf. 11a)

A phonemic schwa can also bear a lexical accent. Roots and lexical suffixes with an accented schwa are found in Thompson but they are not very common. Some examples are listed in (31).

(31)  unmarked root + accented schwa LexS
  a. ?eś/kʷ“up”=eʔy̠ps ‘pinned at neck in front’
     STAT/ʔpin=neck in front (/kʷ“up’/)/eʔy̠ps/ (Th 136)
  b. kʷzeʔ ‘offspring’ (Th 119)
     mit̂s-n-t-∅-es ‘put gaiters on s.o.’ (Th 202)
     pcįkl-es ‘be made a leaf’ (Th 228)
     s/xec’įn’ ‘gooseberry’ (Th 390)
     tuk̂t̂i ‘CPR-station (loan)’ (Th 360)
Morphemes with a floating lexical accent, called unaccentable morphemes in this study, are also found in Thompson. Some examples are given in (32). We have established that unmarked suffixes such as /=cin/, for instance, usually lose stress after an accented root, unless the root has a schwa. However, in the listed examples, unmarked as well as marked suffixes are stressed, despite the fact that the roots they are combined with have full vowels. This is because the root is equipped with a floating lexical accent which eventually, lands on the suffix. Unaccentable morphemes are underlined in order to avoid confusion with other accentual varieties.

(32)

unaccentable roots

a. \[\text{q}^{\text{w}}\text{in}=\text{cin}\]
   \[\text{talk back (to s.o.)}\]
   \[\text{talk}=\text{mouth} \quad (\text{UnAcc /q}^{\text{w}}\text{in/}, \text{UnM}=\text{cin/})\]
   \[\text{q}^{\text{w}}\text{in}=\text{fkn}’\]
   \[\text{talk back} \quad (\text{UnAcc /q}^{\text{w}}\text{in/}, \text{Acc}=/\text{fkn}’/) \quad (\text{Th 296})\]

b. \[\text{n/we}^{?}\text{x-tôn}\]
   \[\text{LOC /ybe-INSTR}\]
   \[\text{s/we}^{?}\text{x}=\text{f}l’e \quad \text{‘adopted child’}\]
   \[\text{NOM /ybe}=\text{offspring}\]
   \[\text{UnAcc /we}^{?}\text{x/}, \text{UnM} = /\text{f}l’\text{eh/}) \quad (\text{Th 373})\]

c. \[\text{cuwes}=\text{úym’x}^{\text{w}}\]
   \[\text{measure the ground}\]
   \[\text{measure}=\text{ground} \quad (\text{UnAcc /cuwes/}, \text{UnM} = /\text{úym’x}^{\text{w}}/)\]
   \[\text{cuwes}=\text{x̄n}\]
   \[\text{measure another shoe against my own}\]
   \[\text{measure}=\text{shoe} \quad (\text{UnAcc /cuwes/}, \text{UnM} = /\text{x̄n/}) \quad (\text{Th 43})\]

It is not so easy to detect unaccentable lexical suffixes. The unaccentedness of the suffix would emerge only when its floating accent is pushed to the root. Unfortunately, the effects of such a move are concealed by the default leftmost prominence. Consequently, there is no way to tell with confidence where the accent originates from in such cases. There is one instance of unaccentability with the resultative suffix /-e/ which is discussed in §5.7.

I have not found any unaccentable morphemes with a schwa. I assume that this is also a consequence of the default clause. An unaccentable root with schwa will force stress to materialize on another element, most probably the suffix. The default clause, however, ensures that a suffix of the shape CVC or C=C will always bear stress when the root has a schwa. Recall that the default

\[^{15}/=\text{il’eh/ ‘offspring-pity’ (usually referred to in some unfortunate connection or as a patient).}\]
clause assigns stress to the leftmost full vowel or the rightmost schwa deriving the following patterns: C⊳C=CVC, C⊳C=C⊳C. It is hard to find evidence from other phonological processes (e.g. reduplication) that will shed some light on the exact source of stress in the aforementioned abstract examples.

In sum, Thompson has both accented and unaccentable morphemes. In the former, the lexical accent is associated to a vocalic peak of the sponsoring morpheme, whereas in the latter it is not:

(33) \[
\text{representation of marked morphemes in Thompson} \\
\begin{array}{ll}
\text{accented} & \text{unaccentable} \\
* & * \\
\mid & \\
\text{CVC} & \text{CVC} \\
\text{C⊳C} & \\
\end{array}
\]

Weak lexical accents in Thompson have segmental content but lack prominence. In this sense they are very similar to lexical accents that function as tails in systems like Greek. These accents also have a segmental content (represented with a right foot-bracket, ‘)’ or a dot ‘.’) but are never assigned prominence unless, of course, more important forces in the system apply to violate this condition. However, weak accents in Thompson have duration, and are therefore called grave accents. A vocalic peak that is associated to a grave accent never reduces to schwa or zero. Recall that vast vocalic reductions affect unstressed vowels in the word. We conclude that besides primary stress, grave accents prohibit vowel reduction or deletion.

It must be emphasized that first, the distribution of a grave accent is not rhythmically conditioned. For example, in (34c) and (34d) both accents, weak and strong, are in adjacent syllables. Second, a grave accent never surfaces with secondary stress. Such an accent has duration but no loudness.

(34) \[
\text{morphemes with grave accents} \\
a. \text{kawpúy} \quad \text{‘cowboy’} \quad \text{(Th 82)} \\
\text{vs. c(ǝ)menús} \quad /\text{cumenús}/ \quad \text{‘very’} \quad \text{(Th 41)} \\
b. \text{p’ọtexíc} \quad \text{‘lie in row-pl’} \quad \text{(Th 257)} \\
\text{kọlzém} \quad \text{‘indigestion’} \quad \text{(Th 89)} \\
\text{vs. k“l’ićiq} \quad /\text{k“l’ićiq}/ \quad \text{‘robbin’} \quad \text{(Th 495)} \\
\text{nmím(ǝ)́l} \quad /\text{nmímeł}/ \quad \text{‘we’} \quad \text{(Th 220)}
\]
Besides roots and lexical suffixes, some grammatical morphemes are also marked with a grave accent such as the imperative suffixes -e (sg) and -wze (pl). These endings are never stressed. Stress is either on the root (35a) or on another suffix (35b), according to the stress rules of the language. The grammatical morpheme remains unstressed, even if it is the only full vowel in the string. In this case stress is on a schwa (35c) or sometimes the increment /et/ is inserted to carry stress (35d).

(35)  

imperative suffixes with grave accents (Th&Th 79)

a. wík-t-ey-wze 'see us!'  
b. kón-t-sém-è 'help me!'  
c. xâs-t-è 'go home!'  
d. sâš-k-n-t-ét-è 'turn her around'

Marked morphemes with floating ‘weak’ accents are hard to detect in Thompson. They are empirically attested, however. In Cupeño (Hill and Hill 1968), the suffix /y/ introduces a weak floating accent which eventually lands on the root. In (36) the accent of the suffix lands on the final syllable of the root, protecting the final vowel of the root from deletion. Primary stress is on the accent of the root, /ísí/ ‘coyote’.

(36)  

floating weak accents in Cupeño (Hill and Hill 1968:236)  
?ísi-l̂̄-yō → ?ísi-l̂̄-yō [?ísi-l̂̄] ‘coyote (objective case)’

The examples in (37), which include accentless morphemes, completes the presentation of the inherent accentual properties of morphemes. Thompson has a substantial number of unmarked roots and unmarked lexical suffixes. When both elements in a complex word are unmarked, the default clause applies to assign stress to the leftmost full vowel (37a-b) or the rightmost schwa (37c).

(37)  
a. n/páw’=ymxʷ ‘the ground is frozen’  
LOC/ψfreeze=ground (/paw’, /=uym’x ’/)
b. $\text{q}^{\prime}\text{u}l=xn$ ‘get a blister on one’s foot’

$\text{blister}=\text{foot}$  ($/\text{q}^{\prime}\text{u}l, /=x\text{\&}/$) (Th 301)

c. $\text{c\&}=x\text{\&}$ ‘get foot chopped or cut’

$\text{hew}=\text{foot}$  ($/\text{c\&}, /=x\text{\&}/$) (Th 23)

The tables in (38) summarize the accentual patterns found in Thompson Salish. Shaded cells denote patterns that have not been found mainly because the default clause of the language neutralizes accentual contrasts.

(38)  

marked morphemes

<table>
<thead>
<tr>
<th>\text{&amp;}Root</th>
<th>\text{&amp;}Lexical Suffix</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V$</td>
<td>$c$</td>
</tr>
<tr>
<td>accented</td>
<td></td>
</tr>
<tr>
<td>$*$</td>
<td>$*$</td>
</tr>
<tr>
<td>CVC</td>
<td>$C&amp;C$</td>
</tr>
<tr>
<td>$*$</td>
<td>$*$</td>
</tr>
<tr>
<td>$=CVC$</td>
<td>$=C&amp;C$</td>
</tr>
</tbody>
</table>

unmarked morphemes

<table>
<thead>
<tr>
<th>\text{&amp;}Root</th>
<th>\text{&amp;}Lexical Suffix</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V$</td>
<td>$c$</td>
</tr>
<tr>
<td>$CVC$</td>
<td>$C&amp;C$</td>
</tr>
<tr>
<td>$CVC$</td>
<td>$C&amp;C$</td>
</tr>
</tbody>
</table>

5.2.5. Prosodic compositionality and head dominance in Root=LexS predicates

In §5.2.3.1, I gave some reasons for considering ‘incorporated’ constructions with lexical suffixes to be the reflection of a syntactic process. In such constructions, a verbal root and a lexical suffix combine into a single word at some stage. The lower lexical item in the syntactic tree, namely the (nominal) lexical suffix, moves to adjoin to the higher lexical item, the (verbal) root. To illustrate this, the lexical suffix /=e\text{x}^\text{\&}/ ‘roof’ in (39) which is the direct object
of the verb root /nek'/ 'change' moves to V and adjoins to it.\textsuperscript{16} Notice that this movement cannot destroy a thematically relevant structure. The moved element leaves a trace which heads a direct object phrase that receives a theta role from the verb and satisfies the verb’s subcategorization requirements (Chomsky 1981). The surface structure of an incorporated lexical suffix must look as follows:

\begin{itemize}
  \item \textbf{(39)}
  \begin{itemize}
    \item IP
    \item VP
    \item V
    \item NP
    \item V
    \item N
    \item N
  \end{itemize}
  \begin{itemize}
    \item nek' = e\textsuperscript{\textit{w}} \textsubscript{i} t\textsubscript{i}
    \item \text\textsuperscript{\textit{change}} = \text\textsuperscript{\textit{roof}}
    \item 'put a new roof'
  \end{itemize}
\end{itemize}

It is evident from the tree in (39) that the root is the head of the VP to which the lexical suffix incorporates. According to the theory of prosodic compositionality developed in this thesis, in lexical accent systems the prosodic and morphosyntactic component share the same structure. This means that for the type of syntactic mode of combination given in (39), there is a particular type of prosodic mode of combination that assigns prosodic structure to that complex constituent. As in languages with fusional morphology, I argue that the function \textsuperscript{g} that maps syntactic structure onto prosodic structure is interpreted as head dominance. The inherent accentual properties of the root/head prevail when a conflict between accents arise. The prosodic dominance of the head element is a desired development since it is true that in many languages head elements display the greatest degree of complexity compared to non-heads. The theory of head dominance equips the grammar with interface constraints. This means that it provides constraints that allow a direct relation between prosodic and morphological constituents as, for example lexical accents and

\textsuperscript{16} Contra Baker (1988, 1996) and much work in contemporary minimalist syntax, the incorporated element seems to adjoin to the right of the verb. I will leave this matter undiscussed here.
morphological heads. Head-constraints is a particular family of interface constraints. In the previous chapters we have seen two head-constraints in action: HEADFAITH and HEADSTRESS. These constraints are crucial for the analysis of the Salish facts as well. Head dominance takes the form of a ranking in which HEADFAITH dominates simple FAITH:

(40) head dominance in Thompson Root=LexS predicates
HEADFAITH >> FAITH

The conflict between the constraints in (40) is initiated by intervening constraints. Let us check how this ranking accounts for accentual patterns in which both the root and the lexical suffix are marked. The relevant examples are listed in (41). Here the marked root wins over the marked suffix.¹⁷

(41) two marked morphemes

accented root + accented lexical suffix
a. píx=qn ‘lay boards on top (of s.t.)’
   vlay-parallel=top (/píx/, /=qín/) (Th 241)
b. kwén=kn’ ‘grab s.o. by the back (of clothes)’
   vgrasp=back (/kwén/, /=kn’/) (Th 115)

unaccentable root + accented lexical suffix
c. ṭac=qín-m ‘tie s.t. up at top’
   vtangle=top-MDL (/ṭac/, /=qín/) (Th 471)
d. qwín=ǐkn’ ‘talks (about s.o.) behind (his) back’
   vtalk=back (/qwín/, /=ǐkn’/) (Th 296)

¹⁷The suffixes /=ewi/ ‘vehicle’, /=usim/ ‘equivalent’, /=enis/ ‘tooth’ attract stress both from accented and unmarked roots. There is a tendency the suffix to be stressed on the final syllable, e.g. nek’=ewi ‘change vehicles’ (Th 213). When the suffix forms the second part of a compound, however, stress is on the initial syllable of the suffix, e.g. s/q’’ut=ewi ‘one side of the canoe’ (Th&Th 29). I have no particular account for the accentual behavior of these suffixes. The suffix /-men/, based on the English -man, derives words that denote profession and is also stress-attracting, e.g. q’’u’-mén ‘water-boy’, ti-mén ‘water-boy’, naq’’w-mén ‘thief’, tI=uym’x’’w-m-mén ‘(surveying) engineer’ (cf. tI=uym’x’’w ‘lay line on ground to measure’) (Th&Th 128). These words seem to behave like compounds both with respect to meaning and stress.
When only one accent is present in incorporated constructions, this accent bears primary stress even if it is sponsored by the lexical suffix. This is suggested by the following data:

(42)  
one marked morpheme  
accented root + unmarked lexical suffix  
\( a. \) k\(^w\)én=cin ‘take (s.o.’s) food’  
\( \sqrt{grasp}=mouth, \) food (/k\(^w\)én, /=cin/)  
(Th 115)  
\( b. \) píx =n’i ‘lay protective covering over s.t.’  
\( \sqrt{lay-parallel}=on \) top (/píx/, /=en’ih/)  
(Th 241)  

unaccentable root + unmarked lexical suffix  
\( c. \) q\(^w\)in=cin ‘talk back (to s.o.)’  
\( \sqrt{talk}=mouth \) (/q\(^w\)in/, /=cin/)  
\( d. \) s/we?x=îl’e ‘adopted child’  
\( NOM/\) be=offspring (/we?x/, /=il’eh/)  
(Th 373)  

unmarked root + accented lexical suffix  
\( e. \) qayt=qín ‘reach top’  
\( \sqrt{reach}=top \) (/qayt/, /=qín/)  
\( f. \) qayt=îkn’ ‘go gradually along ridge to the very top’  
\( \sqrt{reach}=ridge \) (/qayt/, /=îkn’/)  
(Th 265)  

The tableaux in (43) and (44) present the accentuation of complex forms with two lexical accents. The first candidate in both tableaux is the winner because it satisfies the faithfulness requirements of the root/head.

(43)  
<table>
<thead>
<tr>
<th>input: ( \sqrt{píx} ), =qín</th>
<th>HEADFAITH(HEAD)</th>
<th>FAITH(HEAD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. píxqín</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b. píxqín</td>
<td>*!</td>
<td>*</td>
</tr>
</tbody>
</table>

(44)  
<table>
<thead>
<tr>
<th>input: ( \sqrt{k(^w)én} ), =îkn’</th>
<th>HEADFAITH(HEAD)</th>
<th>FAITH(HEAD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. k(^w)énîkn’</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b. k(^w)enîkn’</td>
<td>*!</td>
<td>*</td>
</tr>
</tbody>
</table>
The fact that the lexical accent of the root remains fixed to its underlying position and does not migrate to the suffix suggests that the anti-migration constraint *FLOP is ranked higher than *DOMAIN, the constraint that forces accents beyond their lexically preassigned domain. This is shown in the following tableau:

(45)

<table>
<thead>
<tr>
<th>input: */kʰéén, =cin</th>
<th>*FLOP</th>
<th>*DOMAIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. kʰéncin</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b. kʰéncín</td>
<td></td>
<td>*!</td>
</tr>
</tbody>
</table>

*DOMAIN takes effect only when the accent introduced by a morpheme is not lexically associated to it. A floating accent sponsored by a root is forced by *DOMAIN upon the lexical suffix. This gives rise to patterns like the ones in (42c-d). The tableau in (46) illustrates the derivation of a word composed of an unaccentable root and an unmarked suffix. Note that in this tableau, faithfulness dominates the constraints responsible for default stress. These constraints are combined into a single constraint, labeled here DEFAULT. In Thompson, default imposes stress to the leftmost full vowel. A detailed presentation of default accentuation is offered in the following section.

(46)

<table>
<thead>
<tr>
<th>input: */qʰin, =cin</th>
<th>HEADFAITH (HEAD)</th>
<th>*FLOP</th>
<th>*DOMAIN</th>
<th>FAITH (HEAD)</th>
<th>DEFAULT</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. qʰincin</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>b. qʰincin</td>
<td></td>
<td>*</td>
<td>!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. qʰincin</td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

The first candidate (46a) survives the competition because it satisfies both HEADFAITH and *DOMAIN. This is at the expense of FAITH because the accent of the root/head lands on the lexical suffix. The second candidate (46b) follows a different route. It realizes the lexical accent locally but this does not guarantee
an optimal output either, given the present constraint hierarchy. The last candidate fails to realize the input lexical accent and is stressed by default on the leftmost syllable. This proves to be fatal for its survival.

The last tableau exemplifies the accentuation of the word qaytqín ‘reach top’, which is composed of an unmarked root and an accented suffix. With faithfulness dominating default, the result is always in favor of the morpheme that carries a lexical accent.

(47)

<table>
<thead>
<tr>
<th>input:  √qayt, =qín</th>
<th>FAITH(HEAD)</th>
<th>DEFAULT</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. qaytqín</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b. qátqín</td>
<td>*!</td>
<td></td>
</tr>
</tbody>
</table>

The first candidate of the second tableau is stressed by default. This move, however, is fatal for its survival because it is at the expense of being faithful to the accent of the lexical suffix.

Before concluding this section, another issue should be addressed, namely the accentuation of words with grave accents. As mentioned before, grave accents lack prosodic prominence but they block vowel loss or reduction. In (48) I show the derivation of the word hèléw ‘golden eagle’. This word has a strong lexical accent on the final syllable and a weak lexical accent on the initial one. The strong accent is phonetically realized with duration and loudness, whereas the weak accent is realized only with duration. Both faithfulness to the prosodic head as well as faithfulness to the weak accent outrank the constraints of default accentuation.

(48)

<table>
<thead>
<tr>
<th>input: hèléw’</th>
<th>HEADFAITH (HEAD)</th>
<th>HEADFAITH (GRAVE)</th>
<th>DEFAULT</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. hèléw’</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b. heléw’</td>
<td></td>
<td>*!</td>
<td>*</td>
</tr>
<tr>
<td>c. hélew’</td>
<td></td>
<td>*!</td>
<td></td>
</tr>
</tbody>
</table>

The constraint ranking for the accentuation of Root=LexS predicate words is summarized in (49). The examples refer to tableaux in which the ranking at issue is established.

---
18 I do not give the technical details of vowel reduction. This discussion will take us too far afield.
(49) ranking for the accentuation of Root=LexS predicates in Thompson

\[
\text{HEADFAITH, *FLOP} \\
\downarrow \\
*\text{DOMAIN} \\
\downarrow \\
\text{FAITH(HEAD)} \\
\downarrow \\
\text{DEFAULT} \\
\]

- HEADFAITH(HEAD), FAITH(HEAD) \[\text{p\text{"i}=qn} \quad (43)\]
  \[k\text{"\=e}=\text{kn}’ \quad (44)\]
- *FLOP >> *DOMAIN \[k\text{"\=e}=\text{cin} \quad (45)\]
- *DOMAIN >> FAITH \[q\text{"inc}ín \quad (46)\]
- FAITH >> DEFAULT \[\text{qaytqin} \quad (47)\]

5.2.6. The accentuation of words with no lexical accents

When there is no lexical mark in a complex word, Thompson reveals an edge-oriented stress subsystem. As the reader may recall from Chapter 1, edge-oriented systems do not make use of binary rhythmic structure. Prominence is assigned to some edge (left or right) of the prosodic word. Such systems belong to the fixed-stress group of languages and are often called ‘unbounded’ because the distance between the edge and position of the main stress knows no principled limits. Some edge-oriented systems are driven by peripheral prominence, whereas some others make use of an additional dimension besides peripherality such as syllable strength or quantity. Representatives of the quantity sensitive (edge-oriented) systems are Murik, a lower Sepik language of New Guinea (Abbott 1985, Walker 1996) and Komi (Itkonen 1955, Lytkin 1961, Hayes 1995).

The fixed subsystem of Thompson is quantity sensitive and edge-oriented. Prominence here is assigned to the leftmost syllable with a full vowel, or if there is no full vowel in the string, to the rightmost schwa. Conflicting directionality is another term found in the literature that describes the directionality of stress in such systems (Zoll 1995). The examples in (50) exemplify the described stress algorithm.
What is involved in unbounded systems like the one just described, is a kind of prominential enhancement that calls directly on contrasts in the intrinsic prominence of syllables. To begin with, it is necessary to establish in such systems the relation between the intrinsic prominence of syllables and stress. Prince and Smolensky (1993) propose the constraint Peak-Prominance (PK-PROM) in (51). This constraint states that the element \( x \) is a better peak than \( y \) if the intrinsic prominence of \( x \) is greater than that of \( y \).

\[
\text{PK-PROM}^{19} \\
\text{Peak}(x) > \text{Peak}(y) \text{ if } |x| > |y| 
\]

Following Zoll (1995) and Walker (1996), I propose that in order to capture opposite-edge stress effects, two alignment constraints are required. The first alignment constraint aligns stressed light syllables (i.e. syllables with schwas) to the right edge of the word (or the left edge of the word depending on the language).\(^{20}\) The second alignment constraint aligns a peak to the left edge of the word. The alignment constraints are formulated as follows:

\[
\text{rightmost schwa} \\
g. \text{q’əlx}^{−}\text{δm} \quad \text{‘curl (s.t.)’} \quad \text{(Th 278)} \\
h. \text{cək}^{=}\text{xδn} \quad \text{‘get foot chopped or cut’} \quad \text{(Th 23)} \\
j. \text{c’əq}^{=}\text{xδn} \quad \text{‘get hit on leg’} \quad \text{(Th 60)}
\]

\(^{19}\) The relative prominence of a syllable may be determined on the basis of various factors. For some languages like Thompson it is sonority, for others, syllable length or weight, and yet others, pitch or tone (Kenstowicz 1993, 1994, 1995). The peak-prominence constraint is not strictly binary, but can assess scalar evaluations of the relative harmony of elements as peaks.

\(^{20}\) Zoll (1995) argues that a stressed light syllable counts as marked prosodic structure and proposes to treat stress in such syllable forms as an effect of marked structure licensing. Conflicting directionality arises when the licensing edge is in opposition to the main stress alignment constraint. On the other hand, Crowhurst and Hewitt (1997) suggest that
(52)  a. **ALIGN-R (5, PrW, R)**
Align a stressed schwa to the right edge of the prosodic word.

b. **ALIGN-L (Pk, PrW, L)**
Align a peak to the left edge of the prosodic word.

Let us test now how the proposed constraints account for the accentual facts in (50). The tableau in (53) illustrates the accentuation of the word \( n/p\text{aw}'=ymx \) ‘the ground is frozen’. On its own, **ALIGN-L** is sufficient to derive the desired stress pattern. Candidate (53b) fails to surface because, by not having the peak aligned to the left edge of the prosodic word, it violates the alignment constraint.

![Tableau](image)

In words with schwas, **ALIGN-L** is outranked by **ALIGN-R**. This way the rightmost weak syllable is stressed. This is shown by the tableau in (54), which exemplifies the stress pattern of the word \( c\text{â}k=x\text{ôn} \) ‘get foot chopped’. Candidate (54a) that best satisfies **ALIGN-R** is the winner in this tableau.

![Tableau](image)

More interesting from an accentual point of view are the examples in (50c-e). In the words \( q''\text{ul}=x\text{n} \) ‘get a blister on one’s foot’ and \( m\text{â}k'q'''\text{-p}=\text{âqs} \) ‘dislocate a joint’, stress is on the syllable with the strong peak (i.e. full vowel). Stress is expected on the schwa, given the previous ranking. However, these examples manifest the decisive role of **Pk-PROM**. This constraint, ranked higher than the alignment constraints, guarantees stress on the peak with the greater intrinsic

dependencies between phonological requirements such as the ones examined here can be formally expressed by complex constraints that are related in the same way as expressions in a logical implication.
prominence. The tableaux in (55) evidence the crucial role of peak-prominence. The candidates that satisfy this constraint are the optimal outputs.

(55)

<table>
<thead>
<tr>
<th>input: ( \sqrt{q^u}u, =x\eta )</th>
<th>PK-PROM</th>
<th>ALIGN-R</th>
<th>ALIGN-L</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ( q^u\eta x\eta )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. ( q^u\eta x\eta )</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>input: ( \sqrt{m\alpha ' q, -p, =aqs} )</th>
<th>PK-PROM</th>
<th>ALIGN-R</th>
<th>ALIGN-L</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ( m\alpha ' q^p\eta )</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b. ( m\alpha ' q^p\eta )</td>
<td>*!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The last tableau shows that ALIGN-L can also be crucial in producing the right accentual pattern. This tableau examines two particular candidates of the word \( k\eta =aqs-xi-t-e \) ‘disconnect his end (IMP)’. The first one, (56a), has stress on the leftmost full vowel, whereas the second one, (56b), has stress on the second syllable from the right edge of the word.

(56)

<table>
<thead>
<tr>
<th>input: ( \sqrt{k\eta}, =aqs-xi-t-e )</th>
<th>PK-PROM</th>
<th>ALIGN-R</th>
<th>ALIGN-L</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ( k\eta aq\eta x\eta )</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b. ( k\eta aq\eta x\eta )</td>
<td></td>
<td></td>
<td>**!</td>
</tr>
</tbody>
</table>

Both candidates satisfy PK-PROM and are irrelevant for ALIGN-R. Thus, the decision for the right outcome relies on ALIGN-L which leans towards the first candidate. (56a) is the candidate that best satisfies the constraints of the given hierarchy. It is deemed as the optimal output because it incurs only one violation of the alignment constraint as opposed to the double violation of alignment by the second candidate.

At this point the presentation of Root=LexS word stress in Thompson is completed. In the following sections I present the analogous facts from Spokane and Moses Columbia Salish and their analysis. Lillooet Salish is examined in a separate section (§5.4) because it is a foot-based system with a window.
5.3. Spokane and Moses-Columbia Salish

5.3.1. Background information on Spokane

Spokane is a Salish language of the southern division. Most Spokane speakers are found in the Spokane Indian Reservation northwest of the city of Spokane, Washington. The main sources for Spokane are Carlson 1972, 1990 and Carlson and Flett (C&F) 1989. These sources are less detailed than the sources I used for Thompson. Therefore, it is not always possible to find the appropriate examples for a specific accentual phenomenon.

The consonant and vowel inventory of Spokane is similar to the one of Thompson. Only the status of schwa is different in this language. According to Carlson (1972:12) schwa is not established as a phoneme because it never occurs stressed and its distribution is predictable. Non-pharyngeal resonants are either syllabic or have a schwa inserted before them, if non-initial, or after them, if initial, e.g. $n\text{-}\text{wis}-t$ ‘it’s up high’ (Carlson 1972:13). A schwa is also inserted in other places, such as between a glottalized consonant and a following consonant, e.g. $c\text{-}sq\text{-}q\text{-}\text{me}$ ‘chickadee’ or between a consonant and a following glottal stop, e.g. $hec\text{-}\text{itsi}$ ‘(I am) sleeping’ (Carlson 1972:13).

Spokane is also an unbounded system which, as we will see, stresses the rightmost (full) vowel in unmarked words. Unfortunately, the sources do not provide examples exclusively consisting of schwas, therefore there is no clue as to the direction of prominence in words consisting totally of schwas.

Like Thompson, unstressed vowels reduce to schwa, e.g. $ta\text{ }hin\text{-}s\text{-}m\text{-}\text{ém}$ [ta $ys\text{-}m\text{-}\text{ém}$] ‘she’s not my woman’, unless they are protected by weak accents, e.g. $\text{êmut}$ [?emút] ‘(he) sits’ (Carlson 1972:22).

5.3.2. The Spokane facts

Stress in Spokane is not rhythmic. As in Thompson, lexical suffixes are the center of stem morphology. They join to the root to form a complex form with either a predicative or a compound function. It is important to emphasize that what has been claimed for incorporated and compound constructions in §5.2.3 applies to the other Salish languages discussed in this chapter and to Spokane as well. This means that two types of lexical suffixation are distinguished: Root=LexS predicates and Root=LexS compounds. Examples of both structures are presented in (57) and (58). Stress in (57) is on the root, if accented; otherwise on the lexical suffix. Stress in (58) is always on the lexical suffix.
(57) Root=LexS predicates

a. n/cíq=lé?xʷ-n-t 
   \( LOC= \sqrt{dig}=ground-TR? \) 
   ‘dig the ground (sg.)!’ 
   (C&F 1989:11)

b. ?ép’=us-n-t-∅-en 
   \( \sqrt{wipe}=face-TR-3O-1sgS \) 
   ‘I wiped his face’ 
   (Carlson 1990:74)

c. kʷén=lt-n-t-∅-en 
   \( \sqrt{carry}=child-TR-3O-1sgS \) 
   ‘I carried his child’ 
   (C&F 31)

d. n/c’w’aq=úle?xʷ-m 
   \( LOC/\sqrt{pull}=ground, root \) 
   ‘pull up by the roots’ 
   (C&F 1989:16)

e. n/xʷist=étkw 
   \( LOC/\sqrt{walk}=water \) 
   ‘walk in the water’ 
   (Carlson 1990:74)

f. çn ?emut=áqs 
   \( 1sgS \sqrt{sit}=road \) 
   ‘I sat on the road’ 
   (Carlson 1990:75)

g. ç-m-lq=éne? 
   ‘it fell on a heap around your ears’ 
   (C&F 42)

(58) Root=LexS compounds

a. s/m?em=élc’e? 
   \( NOM/\sqrt{woman}=animal \) 
   ‘female animal’ 
   [sme?mélc’e?] 

b. piλ’=qín 
   \( \sqrt{bare}=head \) 
   ‘bare-head’ 
   [pλ’qín]

c. s-n/?amlq=élxʷ-tn 
   \( NOM-LOC/\sqrt{summer}=house \) ‘summer mat house’ 
   [sn?amlqélxlw’n] 
   (Carlson 1990:76)

The forms in (58) fall into the same group as the corresponding Thompson compound forms. As mentioned earlier, the lexical suffix in such constructions expresses a nominal meaning (i.e. an object or event) that is modified by the root. Stress reflects exactly this modifier-head relation that holds in real compounds as well. I want to emphasize once again that lexical suffixes are not divided into those that form compounds and those that form predicates; the same suffix can form both structures.

In (57) stress is on the lexical suffix unless the root/head is marked; in this case stress is on the root. Notice that the default stress in Spokane is on the rightmost full vowel. This results in the neutralization of some accentual
contrasts. More specifically, it is almost impossible to tell the difference between an accented and an unmarked lexical suffix because stress occurs in both circumstances on the suffix. We are certain that a suffix is accented only when it disyllabic with initial stress such as the suffix /=ule?xw/ in (57d). The inherent accent of this suffix is revealed when it is combined with an unmarked root. If the root is accented itself, then it attracts stress, concealing the accentual properties of the lexical suffix such as in (57a).

Only the difference between accented and unmarked roots can be easily traced. Unaccentable roots do exist in Spokane but they are hard to detect because of the neutralized contrasts caused by the directionality of the default. Their existence is verified by an accentual phenomenon that takes place in grammatical (transitive) suffixation and also by a process of metathesis. In transitive formations the root is stressed, even when it lacks an accent, contra to the directionality of the default. Unaccentable roots are exceptions to this generalization because they force their inherent accent to the suffix, e.g. caqntén ‘I place it’ (cf. §5.6). Moreover, when the non-control suffix /-p/ and the middle suffix /-m/ attach to an unaccentable root, the vowel of the root metathesizes to avoid the lexical accent:

(59) metathesis with unaccentable roots (Carlson 1972:26)
   a. caq-m > cqém21 ‘he hit’
   b. cuʔ-m > cəʔúm ‘he hit’
   c. λ’uxw-p > λ’ɔxẃp ‘he won back’
   d. ɭuʔ-m > ɭəʔúm ‘it is jabbed’

In sum, the chart of marked morphemes in Spokane includes accented and unaccentable roots.

(60) representation of marked morphemes in Spokane
   acented       unaccentable
   *             *
   |               |
   CVC           CVC
   kʷen           caq

21 According to Carlson (1972) the underlying form is /ceq/ but a backing rule, which applies before a postvelar, derives cāq.
5.3.3. Accentuation of Root=LexS predicates in Spokane

Accented roots are dominant. In head-dependent systems like Spokane, the function that maps morphosyntactic structure onto prosodic structure gives priority to the inherent accentual properties of elements that are heads. As mentioned earlier, the root is the head in the complex forms examined here. Technically, head dominance is expressed as follows:

\[(61)\quad \text{head dominance in Spokane Root=}\text{LexS predicates} \quad \text{HEADFAITH} >> \text{FAITH}\]

The analysis of the facts in (57) proceeds in the same manner as in Thompson. I also assume that the conflict between head-faithfulness and faithfulness is established by the ranking *FLOP >> *DOMAIN >> FAITH. Lexical accents do not move to other vocalic positions, unless they are floating. In the latter case they land on the suffix.

The tableau in (62) exemplifies the accentuation of the word \(n/ciq=le\text{?x}^w\) ‘dig the ground’. Faithfulness to the lexical accent of the root dominates the general faithfulness constraint. The winner cannot be any other candidate than the one that best satisfies faithfulness to the lexical accent of the root/head.

\[(62)\]

<table>
<thead>
<tr>
<th>input: (\text{\textbackslash ciq, }=\text{\textbackslash ulle?qx}^w)</th>
<th>HEADFAITH(HEAD)</th>
<th>FAITH(HEAD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. \text{ciqule?qx}^w</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b. \text{ciqule?qx}^w</td>
<td>*!</td>
<td>*</td>
</tr>
</tbody>
</table>

Complex words composed of unmarked morphemes are stressed by default on the rightmost full vowel. I have not found any cases of unmarked words consisting exclusively of schwas. Therefore, the directionality of prominence in this case is unclear. The constraint that accounts for the default pattern is ALIGN-R, given in (63).

\[(63)\quad \text{ALIGN-R (Pk, PrW, R)}\]

Align a peak to the right edge of the prosodic word.

The accentuation of the word \(n-x^w\text{ist}\text{=\textbackslash etk}^w\) ‘walk in the water’ is presented in (64). ALIGN-R is sufficient to derive the desired stress pattern. Candidate (64b) fails to surface because it violates the alignment constraint by not having the peak aligned to the right edge of the prosodic word.
HEAD DOMINANCE IN POLYSYNTHETIC LANGUAGES

(64)

<table>
<thead>
<tr>
<th>input: $\sqrt{x^w}_{ist, =etk^w}$</th>
<th>ALIGN-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. $x^w_{ist\acute{e}tk^w}$</td>
<td></td>
</tr>
<tr>
<td>b. $x^w_{istetk^w}$</td>
<td>*!</td>
</tr>
</tbody>
</table>

PK-PROM proves to be crucial for the accentuation of words that contain schwas and full vowels as, for example, $tq\acute{u}l\tilde{m}\ddot{\eta}$ ‘I hit you people’. Unfortunately, I could not find an example of lexical suffixation, so I borrowed an example from transitive derivation. For the sake of completeness I present the analysis of this case in (65). The tableau in (65) makes clear that the winning candidate is the one with prominence on the rightmost syllable with a full vowel. It is not important that this stress pattern implies multiple violations of ALIGN-R because this constraint is dominated by PK-PROM. Note that the tableau does not include the constraints triggering epenthesis.

(65)

<table>
<thead>
<tr>
<th>input: $\sqrt{tq, -\ddot{u}l, -m, -n}$</th>
<th>PK-PROM</th>
<th>ALIGN-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. $tq\acute{u}l\tilde{m}\ddot{\eta}$</td>
<td>**</td>
<td></td>
</tr>
<tr>
<td>b. $tq\acute{u}l\tilde{m}\ddot{\eta}$</td>
<td>*!</td>
<td></td>
</tr>
</tbody>
</table>

5.3.4. Background information on Moses-Columbia (Nxa’amxcín)

Moses-Columbia Salish, known to the native speakers as Nxa’amxcín, is one of the seven languages of the Interior branch of the Salish family. It is spoken by about 80 speakers on the Colville Reservation in central Washington State. The main source for Moses-Columbia are Czaykowska–Higgins (1993a, 1996) and CWB (1996).

Like the other Salish languages examined here, Moses-Columbia displays a large consonant inventory which is very similar to the consonant inventory of Thompson. There are, however, two points where they differ. Firstly, Moses-Columbia lacks simple pre-velar resonants /γ, γ/ but has coronal resonants /r, r’/ and pharyngeal resonants /h, h’/. Secondly, in addition to the three vowels /i, u, a/, Moses-Columbia has a schwa /ə/, whose position and surface forms is completely predictable. There are few roots with a phonemic schwa, e.g. $s\acute{a}c/s:\acute{l}’-l’-mix ‘\text{STAT/crazy-OC-IMPERF}’$ (CH 234).

Three phonological processes are relevant for the data under consideration in this section: vowel reduction, consonant deletion and vocalization. Most likely, all these processes are triggered by constraints on syllable shapes. Vowel
deletion applies to all unstressed vowels, e.g. [kashúycmnmcn] /kas- \h y=cin-min-t-si-n/ ‘I’m going to bother you (by mouth)’ (CH 202). This process triggers, in turn, consonant deletion or consonant merging. In the aforementioned example, for instance, /t/ merges with /s/ to form an affricate, /c/. Vocalization usually takes place after a consonant and before a vowel, as in [kashaw’iyáltɔɔw] /kas- \h aw’y=alt-mix/ ‘she’s going to give birth’ (CH 201).

Stress in Moses-Columbia is also unbounded and mainly dependent on morphological structure. In the absence of marked morphemes, stress relies on the rightmost syllable with a full vowel, otherwise on the leftmost syllable with a schwa.

As mentioned earlier, Czaykowska–Higgins (1993a) argues that the vowel quality of the schwa is predictable. It is determined by the consonantal environments in which they occur. For instance, it surfaces as [u] before a /w(‘)/ or as [a] before /l/, h/. Root vowels, whose quality is predictable, appear only in certain types of positions. MC roots may contain between one and five consonants although the number of roots containing one or five consonants is very small. (66) lists the surface types of roots containing two, three and four consonants and the number of roots in each type. There were approximately 1500 roots examined (Czaykowska–Higgins 1993a:219).

(66) root types found in MC

<table>
<thead>
<tr>
<th>2C roots</th>
<th>3C roots</th>
<th>4C roots</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVC ~550</td>
<td>CVCC 92</td>
<td>CɔCVC 37</td>
</tr>
<tr>
<td>CɔC ~650</td>
<td>CɔCC 87</td>
<td>CVCC 4</td>
</tr>
<tr>
<td>CCV 2</td>
<td>CCVC 19</td>
<td>CɔCɔC 7</td>
</tr>
<tr>
<td>CVCV 10</td>
<td>CɔC 4</td>
<td>CɔCCVC 3</td>
</tr>
<tr>
<td>CɔCV 4</td>
<td>CVVCV 15</td>
<td>CɔCCɔC 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CVVCVC 5</td>
</tr>
</tbody>
</table>

5.3.5. The Moses-Columbia facts

We have seen that Moses-Columbia distinguishes between two forms of lexical suffixation. The main arguments for this distinction come from CWB’s (1996) paper on Moses-Columbia lexical suffixation. To avoid unnecessary repetition I will not restate the argumentation here (cf. §5.2.3 about the details of this distinction). I proceed here with the presentation of some illustrative examples from Root=LexS compounds and Root=LexS predicates. However, only the
latter cases will be closely examined. The examples are listed in (67) and (68), respectively. Most examples are drawn from Czaykowska–Higgins (1993a).

(67) Root=LexS compounds
a. n/naqs=qín
   LOC/vone=top ‘one tipi’ (CH 206)
b. s/q’y’=míx
   NOM/write=people ‘school children’ (CH 216)
c. p’isƛ’?=ákst
   pl.big=hand ‘big hands’ (CH 229)
d. k’wi=mín=ásq’t
   vfew=day ‘a few days’ (CH 259)

(68) Root=LexS predicates
a. na/má’ı’w=ikn
   LOC/vbreak=back ‘(he) broke his back’ (CH 230)
b. yap/kwán=akst-n-t-ø-n
   LOC/vgrab=hand-CTR-TR-3O-1sgS ‘I grab s.o. by the hand’ (CH 229)
c. xw’il=akst-m
   vreach=hand-MIDDLE ‘reach out’ (CH 230)
d. k’it’=álp
   vcut=tree ‘cut down tree’ (CWB 1996:34)
e. kw’ułn=íc’?-n-t-ø-n
   vborrow=skin-CTR-TR-3O-1sgS ‘I borrow a wig’ (CH 207)

As mentioned in earlier sections, compound stress is on the element modified by the root. In predicates stress varies which means it can be on the root or on the suffix. There are reasons to believe that, like Spokane, the default assigns prominence to the rightmost full vowel, otherwise to the leftmost schwa. This is shown in (69) which also includes some formations with vowelless roots. In (69d-e) stress is on the vowel of the suffix because this is the only full vowel in the string. The vowel of the prefix is irrelevant because prefixes are not part of the stress domain. These formations come from the transitive inflection because there were no examples of Root=LexS predicates available in the corpus of data.
edge-oriented stress as default in Moses-Columbia

stress on the rightmost full vowel

a. s-tux\textsuperscript{w}-tax\textsuperscript{w}-x\textsuperscript{w}- m’ix ‘getting convulsions’\textsuperscript{22}

b. ?arasìk\textsuperscript{w} ‘turtle’ (CH 205)

c. cók-n-t-sá-s ‘he hit me’

\(\text{hit-CTR-TR-1sgO-3S} (/\text{ck}/)\) (CH 216)

d. ?acf’om-s-t-ál-s ‘he is feeding us’

\(\text{STAT}/\text{feed-CAUS-TR-1plO-3S} (/\text{ml}/)\) (CH 226)

stress on the leftmost schwa\textsuperscript{23}

e. kat/k’ıt’-p=xən ‘(I) lost my toes’

\(\text{LOC}/\text{lose-INCH}=\text{toe}\) (CH 225)

f. ?óh”a? /ɪh”ɔʔ/ ‘cough’ (CH 223)

g. mɔlxaʔ /mɔlɔʔ/ ‘tell a lie’ (CH 223)

If the default clause assigns prominence to the rightmost full vowel, then stress on the root indicates that the root is accented (68a-b). Stress on the lexical suffix, on the other hand, indicates either an accented suffix or the default prominence (68d-e). Consequently, accentual contrasts are neutralized by the directionality of the default stress. The only clear distinction is the one between accented and unmarked roots:

(70) accented roots unmarked roots

máí’\textsuperscript{w} k’ít’

x\textsuperscript{w}ír k”úln

k\textsuperscript{w}án ?arasìk\textsuperscript{w}

mɔlxaʔ

It is worth mentioning that there are some instances of accented roots containing a schwa, e.g. sac/s̩l’-l’-mix ‘STAT/crazy-OC-IMPERF’, kʃt’=ul’¡x\textsuperscript{w} ‘the ground is wet’ (CH 234).

\(\text{22}\) This example is taken from Czaykowska–Higgins (1993b).

\(\text{23}\) We have seen in §5.3.3 that the constraint responsible for stress on the rightmost full vowel is \textit{ALIGN-R} (cf. (63)). A second alignment constraint is at play here, namely \textit{ALIGN-L} (δ, PrW, L): Align a stressed schwa to the left edge of the prosodic word (Zoll 1995, Walker 1996). This constraint ranked above \textit{ALIGN-R} will assign stress prominence to the leftmost schwa in the word.
The analysis of the facts in (68) and (69) is analogous to the analysis of the marked and unmarked words in Spokane. For this reason I believe that a detailed presentation of the analysis will add nothing new from a theoretical point of view. The table in (71) summarizes the stress patterns attested in predicate and compound lexical suffixation of Spokane and Moses-Columbia Salish. The patterns in which the two structures diverge are highlighted. Notice that default neutralizes some contrasts. Also keep in mind that the same suffix can participate in both formations. The ranking that derives head dominance effects in Root=LexS predicates follows in (72).

(71)  accentual patterns in Root=LexS predicates and compounds

<table>
<thead>
<tr>
<th>input forms</th>
<th>Root=LexS predicate</th>
<th>Root=LexS compound</th>
</tr>
</thead>
<tbody>
<tr>
<td>√CVC=CVC</td>
<td>CVC=CVC</td>
<td>CVC=CVC</td>
</tr>
<tr>
<td>√CVC=CVC</td>
<td>CVC=CVC</td>
<td>CVC=CVC</td>
</tr>
<tr>
<td>√CVC=CVC</td>
<td>CVC=CVC</td>
<td>CVC=CVC</td>
</tr>
<tr>
<td>√C5C=CVC</td>
<td>C5C=CVC</td>
<td>C5C=CVC</td>
</tr>
<tr>
<td>√CVC=C5C</td>
<td>CVC=C5C</td>
<td>CVC=C5C</td>
</tr>
</tbody>
</table>

(72) ranking for the accentuation of Root=LexS predicates in Spokane and Moses-Columbia

HEADFAITH(HEAD), *FLOP

*DOMAIN

FAITH(HEAD)

DEFAULT C

(PK-PROM >> ALIGN-L >> ALIGN-R)

- HEADFAITH(HEAD) >> FAITH(HEAD)  n/ciq=le?qxw-n-t (62)
- PK-PROM >> ALIGN-R              n/xwist=étkw   (64), (65)
- ALIGN-L >> ALIGN-R              kat/k’st’-p=xøn (69f)

I will come back to Moses-Columbia in §5.6 where I discuss some more interesting facts from the transitive derivation. The last case study of incorporation is Lillooet Salish.
5.4. Lillooet Salish (St’át’imcets)

5.4.1. Background information on Lillooet

Lillooet is a Northern Interior Salish language spoken in southwest mainland of British Columbia with two dialects, Mount Currie and Upper. These dialects are mutually intelligible, the main difference being in the vocabulary. The source used here for Lillooet Salish is Van Eijk (1985) (henceforth E in the examples).

Lillooet and Thompson Salish have the same consonant and vowel inventory. However, /s/ has an epenthetic rather than a phonemic status in Lillooet. There are traces of quantity sensitivity in the language. Schwas are never stressed unless there is no full vowel in the word, whereas superheavy syllables ((C)VCC) always attract stress. Unstressed vowels reduce to schwa or delete in this Salish language as well, e.g. *slamála* [sləmála] ‘bottle’, *xʷik’m=ák* [xʷək’málxʷ] ‘shed for butchering fish’, *n/k’axín’was* [n-k’x-in’was] ‘island, dry in the middle (lit)’ (E 37).

Lillooet is very interesting from an accentual point of view. Besides quantity sensitivity, the system is foot-based. Trochees are built from left to right and an edgemost rule assigns primary prominence to the rightmost foot. Schwas are avoided in foot-head position. It is interesting to see how these rhythmic principles interact with lexical marking.

Many roots occur as free forms, e.g. *cukʷ* ‘finished’, but a number of roots occur exclusively with an affix, or reduplicated, or with interior glottalization, e.g. *səl-ilx* ‘to exert oneself’, *ləkʷ-lákʷ* ‘loose’, *laʔkʷ* ‘to become loose’ (E 43). The main root-types with approximate percentages are:

(73)  

| Shape | Percentage | Root | Meaning | Meaning
|-------|------------|------|---------|
| CVC   | 65%        | q’aʔ | ‘to eat’ | *
| CVCC  | 18%        | mulx | ‘stick’ | *
| C(σ)CVC | 5%      | ptak | ‘to pass by’ | *
| CVCVC | 5%         | máwal | ‘alive’ | *
| residual types | 7%     | kʷtamc | ‘husband’ | *
|       |            | tǔlkis | ‘hand-maul’ | *

Lillooet makes the distinction between two types of lexical suffixation: predicate and compound. As we have seen in the other languages of this family, Root=LexS compounds are stressed on the rightmost element (74a) like real compounds (74b). The same set of suffixes can participate in Root=LexS compounding as well as predicate formation. Compound forms are not analyzed here.
(74) **compound forms in Lillooet**

a. **Root=LexS compounds**

<table>
<thead>
<tr>
<th>Form</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>n-xʷənaʔm=ásk’aʔ</td>
<td>‘power song’</td>
</tr>
<tr>
<td>pal?=ásq’ət</td>
<td>‘one day’</td>
</tr>
<tr>
<td>?amh=ín’ak</td>
<td>‘good gun’</td>
</tr>
<tr>
<td>cənəʔəm=íł’ap</td>
<td>‘denim pants’ (cənəʔəm ‘Chinese’)</td>
</tr>
</tbody>
</table>

b. **[root+root] compounds**

<table>
<thead>
<tr>
<th>Form</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>q̓əl-əł-tmí̱xʷ</td>
<td>‘bad land (lit.), storm’</td>
</tr>
<tr>
<td>p’əc-əł-ləqəm</td>
<td>‘first snow’</td>
</tr>
<tr>
<td>ləp’-əł-kʷúnaʔ</td>
<td>‘cured (by burying) salmon eggs’</td>
</tr>
</tbody>
</table>

(75) **Root=LexS predicates**

a. súp=ús-əm²⁴       | ‘to scratch one’s face’            |

b. c’aw’=ús-əm       | ‘to wash one’s face’               |

In (75a) the root /sup/ and the lexical suffix /=us/ are accented. The marking properties of these morphemes are established by the following line of argumentation: the example (75b), which is composed of the root /c’aw’/ and the same lexical suffix, is stressed on the suffix. This pattern implies that either the stress pattern at issue originates from the language-specific foot-form or that the root is unmarked and the suffix accented. If the foot-form is an iamb, then the word in (75b) is footed as follows: (c’aw’=ús)-əm.²⁵ Other forms with the same root, however, clearly indicate a trochaic pattern: (c’áw’=i)lap ‘to wash

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²⁴ Most predicate forms in Lillooet include a grammatical marker (e.g. transitivizer, intransitivizer).

²⁵ Syllable structure is a very complicated issue in all Salish languages. For the purposes of footing in this study I adopt a somewhat loose form of syllabification. The readers who are interested in Lillooet syllable structure can find more information in Roberts (1993). A valuable source for prosodic morphology phenomena in Lillooet is Urbanczyk (1996).
the floor’ (E 103), \(c’aw’=qa(n’ís-\text{-m})\) ‘to brush one’s teeth’ (E 113).
Moreover, as I show later, secondary stress adduces strong evidence for a
trochaic organization of the language. We infer from the above that the footing
in Lillooet is not iambic and that the word in (75b) is parsed as follows:
\(c’aw’=(ús-\text{-m}).\) This parsing indicates that the root \(c’aw’/\) is unmarked and the
suffix \(=ús/\) is accented. An alternative hypothesis would be to argue that the
root is unaccentable and the suffix unmarked. Often there is no way to choose
one solution over the other because the crucial examples are missing. But we
can tell with confidence that the root \(c’aw’-/\) is not unaccentable from examples
like \((c’áw’=i)lap\) ‘to wash the floor’ and \((c’aw’=qa(n’ís-\text{-m})\) ‘to brush one’s
teeth’.

Indeed, if a root such as \(/ciq/\) is unmarked, then it is expected to lose stress
from any accented suffix. Such roots can bear stress only by default as, for
example, in \((c’áw’=i)lap\). A more complete picture of the marked and unmarked
patterns of Lillooet is presented in (76).

\begin{flushleft}
\textit{words with marked and unmarked morphemes in Lillooet}
\end{flushleft}

\begin{enumerate}
\item \textbf{accented root + accented lexical suffix}
  \begin{enumerate}
  \item \textit{súp=us-\text{-m}} ‘to scratch one’s face’ (E 98)
  \item \textit{súp=almox-am}\footnote{Schwas in Lillooet are never stressed, unless they are the only vowels in the word. This explains the difference between initial stress in this example and penultimate stress in the following form.} ‘to scratch oneself on the belly’ (E 102)
  \end{enumerate}
\item \textbf{unmarked root + accented lexical suffix}
  \begin{enumerate}
  \item \textit{c’aw’=ús-\text{-m}} ‘to wash one’s face’ (E 98)
  \item \textit{k’txw=ús-\text{-on}} ‘to cut off s.o.’s head’ (E 98)
  \item \textit{χaλ’am’=ús} ‘to go up a hill’ (E 99)
  \item \textit{maλ’=ayú?} ‘people mixed together’ (E 116)
  \end{enumerate}
\item \textbf{accented root + unmarked lexical suffix}
  \begin{enumerate}
  \item \textit{n-súp=laqs-am’} ‘to scratch one’s nose’ (E 111)
  \end{enumerate}
\item \textbf{unmarked root + unmarked lexical suffix}
  \begin{enumerate}
  \item \textit{c’áw’=lap} ‘to wash the floor’ (E 103)
  \item \textit{k’wɔz=ánis-\text{-m}} ‘to varnish boards’ (E 100)
  \end{enumerate}
\end{enumerate}
There are no unaccentable suffixes in the corpus of the data I examined. One instance of a pre-accenting suffix has been found. The grammatical suffix /-tam/, which precedes the suffixes /-al’ap/ and /-kal’ap/ has a weak lexical accent. When this suffix is parsed it needs to be in weak foot position, e.g. (pun-tam)(-kal’ap) \( \neq \) ‘find PASS-2plS’ (E 22), (cun-tam)-(al’ap)-as ‘tell-2plO-3sgS’ (E 174-175). The example (x’un-tam)-(al’ap)-(as-wit) ‘whistle at-2plO-3plS’ is telling: when canonical (left-to-right) footing demands the weakly-marked suffix to be parsed as the head of the foot, the suffix is skipped and the first syllable of the following morpheme is parsed into the head of the foot. If, according to what has been claimed in this study, inherent accentual properties take precedence over the default in lexical accent systems, then one would expect the suffix to force stress upon the last syllable of the root. Recall, however, that it is illegitimate for schwas to be stressed. This requirement rules the footing x’un(tam-tam)-(al’ap)-(as-wit) out as ungrammatical.28

The present example also suggests that preaccentuation is a form of weak marking. Similar suffixes in Greek give the impression of preaccentuation because of the particular prosodic principles that are active in the language. Lillooet shows that it is not necessary to interpret weakly-accented suffixes as pre-accenting because they do not always imply stress on the preceding syllable. These morphemes simply avoid prosodic prominence. In this sense pre-accenting suffixes found in Greek and Lillooet are very close to the weakly accented suffixes encountered in unbounded systems such as Thompson and Spokane.

5.4.3. Prosodic compositionality and head dominance in Lillooet

According to the theoretical framework proposed here, root-dominance follows from head dominance. In compositional systems like the ones examined in this study, the mapping between morphology and phonology is interpreted as prosodic dominance of the head element. As a result, marked heads prevail over

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27 According to Van Eijk (1985:24) vowels which serve as the counting bases in stress assignment, i.e. vowels in foot-head positions, receive secondary stress.

28 The form (x’un-tam)-(tam-a)(l’ap-as)-wit is excluded because it incurs a double violation of faithfulness. The vocalic peak of the suffix /-tam/ not only loses its accent but it is also added secondary stress.
other marked morphemes in the string. Head dominance is spelled out with the ranking HEADFAITH >> FAITH. Unfortunately, no intermediate constraints establish the conflict of these two constraints in Lillooet. Therefore these constraints are unranked in this Salish language.

The tableaux (77) and (78) illustrate the accentuation of the forms $súp=us-\sigma m$ ‘to scratch one’s face’ and $c’aw’=ús-\sigma m$ ‘to wash one’s face’. The winner of tableau (77) cannot be any other candidate but the first one. This candidate is faithful to the lexical accent of the root as opposed to the second candidate, which fatally sacrifices faithfulness to the accent of the root/head. Keep in mind that trochaic feet are enforced by high-ranking TROCHEE.

(77)

<table>
<thead>
<tr>
<th>input: $\sqrt{súp}, =ús, -\sigma m$</th>
<th>HEADFAITH(HEAD)</th>
<th>FAITH(HEAD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. (súpus)am</td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b. su(púsam)</td>
<td>*!</td>
<td>*</td>
</tr>
</tbody>
</table>

In the second tableau, the first candidate complies to both faithfulness constraints and wins. In (78b), the root/head has been added the lexical accent of the suffix. This is a fatal move because it triggers violation of head-faithfulness. Notice that stress on the root is also at the expense of *FLOP because the accent is not linked to the vocalic peak of the suffix any more.

(78)

<table>
<thead>
<tr>
<th>input: $\sqrt{c’aw’}, =ús, -\sigma m$</th>
<th>HEADFAITH (HEAD)</th>
<th>FAITH(HEAD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. c’aw’(ús-\sigma m)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. (c’áw’us)-\sigma m</td>
<td>*!</td>
<td></td>
</tr>
</tbody>
</table>

One of the most interesting aspects of Lillooet stress is the accentuation of polysyllabic forms which bring to light the rhythmic aspects of the system. The examples discussed in the following section suggest that rhythmic principles can co-exist with marking in a language. They also show that Lillooet is a borderline between a lexical accent and a rhythmic system. This coexistence opens a new perspective for our analysis because it gives us the chance to examine whether or not rhythmic properties can conceal the effects of head dominance and possibly influence the evolution of a stress-system.
5.4.4. Rhythmic patterns in Lillooet

Unmarked words display various accentual patterns depending on vowel quantity and also on syllable structure. The examples in (79) manifest that first, trochaic feet are built from left to right and, second, primary stress is assigned to the rightmost foot: \(c′áw′=ilap, (c′áw′=qa)(n′ís-əm)\).

(79) words with no lexical accents
a. \(c′áw′=ilap\) (/=ilap/) ‘to wash the floor’ (E 103)
b. \(c′àw′=qan′ís-əm\) ‘to brush one’s teeth’ (E 113)

We infer from the facts in (79) that two additional constraints must be at play here, ALIGN-PRW and ENDRULE-R. Moreover, the fact that stress is not final in (79b) suggests that parsing syllables to feet is not at the expense of foot-binality hence \(FtBin >> Parse-\sigma\).

(80) input: \(c′aw′, =ilap\)

<table>
<thead>
<tr>
<th></th>
<th>ER-R</th>
<th>ALIGN-PRW</th>
<th>FtBin</th>
<th>Parse-\sigma</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b.</td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>*!</td>
<td></td>
<td></td>
<td>*</td>
</tr>
</tbody>
</table>

Obviously, the first candidate is the winner because it complies to all the given constraints. The losing candidate (80b) is ruled out by FtBin, whereas the losing candidate (80c) incurs two violations of Parse-\(\sigma\) and a crucial violation of ALIGN-PRW (the foot starts on the second syllable from the left edge of the prosodic word).

The rhythmic pattern is disturbed when the word contains schwas. Some examples are listed in (81). Keep in mind that schwas cannot host (primary or secondary) stress. This is because PK-PROM will choose full vowels as better peaks than schwas. If schwas cannot be parsed in weak foot positions, they are left unparsed: \(k'\hat{\text{ɛ}}\=(\acute{\text{ánis}})-əm, s-τ\check{q}=\acute{\text{əl}}'(\hat{\text{wás}})\). More specifically, the example in (81a) suggests that PK-PROM outranks the requirement of having the left edge of the prosodic word aligned to the left edge of the foot. Consequently, the

29 For an alternative account on the rhythmic aspects of Lillooet stress and syllable structure see Roberts (1993).
30 ALIGN-PRW (PrW, L, Ft, L) (McCarthy and Prince 1993b): Any \(i_{PrW}\) is aligned with a \(i_{Ft}\).
ENDRULE-R (Prince 1983, cf. EDGEMOST in Prince and Smolensky 1993): The rightmost foot of the word is the head of the prosodic word.
ranking is PK-PROM $\gg$ ALIGN-PRW. In (81b), the syllable with the only full vowel in the word forms a monosyllabic foot. We infer from that that PK-PROM outweighs FTBIN. Finally, a schwa hosts stress only when there are no full vowels in the string, as in (81c).

(81) a. $k^{w}z=\text{ánis}=\text{ém} \quad \text{‘to varnish boards’} \quad (E \ 100)$  
b. $s/\text{áq}=\text{ól}=\text{wás} \quad \text{‘to have one’s hands on hips’} \quad (E \ 108)$  
c. $n/p^{w}=\text{i}=\text{qs} \quad \text{‘to get a bleeding nose’} \quad (E \ 111)$

<table>
<thead>
<tr>
<th>input: $\nu/\text{áq}, =\text{ól}=wás$</th>
<th>PK-PROM</th>
<th>ALIGN-PRW</th>
<th>FTBIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. $\text{tóqol}'(wás)$</td>
<td>$\ast \ast$</td>
<td>$\ast$</td>
<td></td>
</tr>
<tr>
<td>b. $(\text{tóqol}')wás$</td>
<td>$\ast ! !$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Candidate (82b) conforms better to all constraints but the most important one. This proves to be fatal for its survival, as shown by the victory of the first candidate (82a).

PK-PROM is decisive for the accentuation of words that have syllables of the shape (C)VCC. Such syllables count as heavy and attract stress. This is evidenced by the examples in (83).

(83) a. $n/\text{lucz}=\text{ú}=\text{ql}=\text{lt} \text{-am} \quad \text{‘to clear one’s throat’} \quad (E \ 103)$  
b. $k^{w}=\text{lw}=\text{wà} \quad \text{‘to borrow a car, canoe’} \quad (E \ 115)$  
c. $n^{w}=\text{w}=\text{wà} \quad \text{‘to steal a ride (e.g. on a train)’} \quad (E \ 115)$

There are reasons to believe that the lexical suffix in (83a) is unmarked as evidenced by examples like $k^{w}=\text{á}=\text{wà} \quad \text{‘to have a dry throat’} \quad (E \ 103)$. (Cf. $n/k'/\text{ax}=\text{in}'=\text{wà} \quad \text{‘island’} \quad (E \ 37,101)$). Under this assumption, the only possible parsing for (83a) is $n-(\text{licz})=(\text{ú}=\text{ql})(\text{lt})=\text{-am}$. Similarly, (83b) and (83c) are parsed as $(k^{w}=\text{h}1)=(\text{á}=\text{wà})$ and $n=\text{q}^{w}=(\text{á}=\text{wà})$, respectively. It is important to note that the absence of secondary stress in the latter example is indicative of the parsing $n^{w}=(\text{á}=\text{wà})$ and not $(n=\text{q}^{w})=(\text{á}=\text{wà})$. In short, such examples imply that CVCC syllables count as heavy for stress. The tableau in (84) illustrates how the correct prosodic pattern of $n=\text{q}^{w}=(\text{á}=\text{wà})$ arises. The competition is controlled by PK-PROM which rules out candidates (84b) and (84c) because their peaks are not on the heavy (CVCC) syllable.
To summarize, the ranking for rhythmic constraints in Lillooet is:

(85)  
ranking for rhythmic stress in Lillooet Salish

ER-R, TROCHEE, PK-PROM

<table>
<thead>
<tr>
<th>təqəl’wás (82), naq’wáwl (84)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTBIN, ALIGN-PRW</td>
</tr>
<tr>
<td>c’áw’ilap (80)</td>
</tr>
<tr>
<td>PARSE-σ</td>
</tr>
</tbody>
</table>

One may wonder what effect these rhythmic constraints may have on marked patterns. The examples in (86) evidence that in long forms the marked/unmarked root opposition is neutralized.

(86)  
rhythmic stress in marked words

sūp=alús-əm  /sūp=alus-əm/  ‘to scratch one’s eye’  (E 98)

(cf. sūp=almox-am (75a))

vs. c’áw’=qan’ís-əm  ‘to brush one’s teeth’  (E 113)

(cf. c’áw’=ilap (75b))

Notice that faithfulness to the foot-head of the root is not violated in sūp=alús-əm because the input head is present in the output and it bears secondary stress.

Marked words of the shape CVCVC as, for example, ca(l’áh) ‘lake’, qa(n’ím) ‘to hear’, qʷu(l’íh) ‘pitch’ (E 46), manifest that faithfulness constraints outrank FTBIN and ALIGN-PRW; the left edge of the prosodic word and the left edge of a foot are misaligned and the foot built by the lexical accent is monosyllabic. A similar conclusion is drawn by examples such as c’áw’(=ús-əm) (76b) ‘to wash one’s face’ and (xaʔam’)(=ús) ‘to go up a hill’ (76b). The former violates ALIGN-PRW and the latter FTBIN.
It is unfortunate that Van Eijk (1985) does not list an example of predicate construction in which a marked root is combined with a heavy suffix. Thus, the ranking between HEADFAITH and PK-PROM remains undecided.

The ranking of all constraints participating in the accentuation of Root=LexS predicates is summarized in (87). Rhythmic constraints build trochaic feet on the basis of lexical information of the root/head or the lexical suffix, if the root is unmarked. Simple faithfulness is dominated by peak-prominence. This is suggested by examples like (x \textit{hit\textbar }ns)-\textit{tam-(\textbar }l\textbar ap)(\textbar -\textbar ás-wit) where the suffix /\textbar -tam/ sacrifices tailness in order to avoid stress on the schwa. The remaining structural constraints are low in the hierarchy. FTBIN is dominated by faithfulness implying that marked feet need not comply to binarity but rhythmic ones must be obligatorily binary.

(87) \textit{ranking for the accentuation of Root=LexS predicates in Lillooet} 

\begin{align*}
\text{ER-R, TROCHEE, PK-PROM, HEADFAITH} \\
\text{\textbar FAITH} \\
\text{\textbar FTBIN, ALIGN-PrW} \\
\text{\textbar PARSE-\sigma}
\end{align*}

The table in (88) summarizes the accentual patterns found in Lillooet Salish. Marked roots attract stress from marked suffixes. In unmarked forms the default would promote penultimate or final stress depending on whether the last syllable is superheavy or not. The interaction of lexical accents with weight is unclear because the crucial data is missing.

\footnote{I found two examples of the type CVC=VCC-\sigma C, e.g. \textit{n/p'ix=alk'-\sigma n} ‘to unravel a rope’ (E 106), \textit{páx=alq'-\sigma m} ‘to scrape a stick’ (E 107). Since both examples are escorted by grammatical suffixes the heaviness of the lexical suffix is obliterated; the last consonant of the lexical suffix syllabifies with the following vowel.}
5.5. Summary of Salish Accentuation in the Morphological Stem

In this section I discussed the accentuation of lexical suffixation, a grammatical construction that is documented in all Salish languages. I showed that two types of lexical suffixation exist in these languages. The distinction between these two types is not based on prosodic criteria since often the same suffix participates in both constructions.

In the first type of lexical suffixation, the Root=LexS construction exhibits the semantic and prosodic properties of compounds. The root is the modifier of the meaning expressed by the lexical suffix. Stress follows this modifier-head relation by being on the element that is modified, namely the lexical suffix.

In the second type of lexical suffixation, the Root=LexS construction has the syntactic and semantic properties of incorporated constructions. The lexical suffix satisfies the argument structure of the root and the whole Root=LexS construction takes on a predicate role in the sentence. The lexical suffix corresponds to the same range of relations typical for noun incorporation: object and oblique as locative and instrument.

Stress in predicative formations shows sensitivity to morphological structure and in particular to head-dependent relations. The element that is a head in the morphosyntactic structure is prosodically prevalent. Although there is a debate regarding the existence of lexical categories in Salish, it is unquestionable that in the syntax there is a three-way distinction between NPs, APs and VPs. In the ‘incorporated’ constructions the root is syntactically the head of the VP into which the lexical suffix incorporates.

As in fusional languages, the morphological headedness of the root is interpreted as prosodic headedness by the function $g$ that performs the mapping between the morphosyntactic and prosodic component of the grammar. Head dominance takes the form of the ranking $\text{HEADFAITH} \gg \text{FAITH}$. This ranking is the backbone of the accentual system in all four languages examined here.

Despite the fact that the Salish languages share head dominance, there are still many differences with respect to stress. These differences appeal to
prosodic principles and, more specifically, to the structural constraints that take charge of accentuation in the absence of lexical accents. In Thompson, Spokane and Moses-Columbia default prominence is edge-oriented and has conflicting directionality. In Lillooet, on the other hand, default is dependent on footing, quantity sensitivity and an edgemost rule that assigns prominence to the rightmost foot. The table in (89) summarizes the structural constraints that participate in the accentuation of Salish and indicates their domination order with respect to each other and (head) faithfulness.

(89)

<table>
<thead>
<tr>
<th>language</th>
<th>ranking</th>
<th>default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thompson</td>
<td>HF &gt;&gt; F &gt;&gt; PK-PROM &gt;&gt; ALIGN-R &gt;&gt; ALIGN-L</td>
<td>stress the leftmost V; else, the rightmost V</td>
</tr>
<tr>
<td>Spokane/MC</td>
<td>HF &gt;&gt; F &gt;&gt; PK-PROM &gt;&gt; ALIGN-L &gt;&gt; ALIGN-R</td>
<td>stress the rightmost V; else, the leftmost V</td>
</tr>
<tr>
<td>Lillooet</td>
<td>ER-R, TROCHEE, PK-PROM, HF &gt;&gt; F &gt;&gt; FTBIN, ALIGN-PRW &gt;&gt; PARSE-σ</td>
<td>stress the rightmost foot</td>
</tr>
</tbody>
</table>

In Spokane and Moses-Columbia, default prominence to the rightmost (full) vowel obscures the marked/unmarked opposition in lexical suffixes. In Lillooet, default and other prosodic constraints interact with faithfulness. The high ranking of rhythmic constraints has a dramatic impact on the neutralization of the marked/unmarked opposition in roots and lexical suffixes. Marked patterns are revealed only in short words, whereas in long words head dominance is concealed by principles which enforce exhaustive binary footing, stress on the rightmost foot, weight sensitivity and so on. The table in (90) presents how the four languages examined here realize the same set of inputs.

(90)

<table>
<thead>
<tr>
<th>input</th>
<th>Thompson</th>
<th>Spokane/MC</th>
<th>Lillooet</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. CVC=CVC(C)</td>
<td>CVC=CVC(C)</td>
<td>CVC=CVC(C)</td>
<td>CVC=CVC(C)</td>
</tr>
<tr>
<td>b. CVC=CVC(C)</td>
<td>CVC=CVC(C)</td>
<td>CVC=CVC(C)</td>
<td>CVC=CVC</td>
</tr>
<tr>
<td>c. CVC=CVC(C)</td>
<td>CVC=CVC(C)</td>
<td>CVC=CVC(C)</td>
<td>CVC=CVC</td>
</tr>
<tr>
<td>d. CVC=CVC(C)</td>
<td>CVC=CVC(C)</td>
<td>CVC=CVC(C)</td>
<td>CVC=CVC</td>
</tr>
</tbody>
</table>

Thompson displays sharper distinctions between marked and unmarked patterns. First, a comparison between (a) with (b), and (b) with (d) informs us about the accentual properties of roots and lexical suffixes. For example, by
comparing the word $k \text{"en}=kn$ ‘grab s.o. by the back (of clothes)’ with the word $n/paw'=\text{ıkn}$ ‘get a layer of ice on top’, we are able to tell whether one of the two elements is accented or not. Whether it is the root or the suffix depends on another comparison between $n/paw'=\text{ıkn}$ ‘get a layer of ice on top’ and $n/paw'=ymx$ ‘the ground is frozen’. Although it is a cumbersome procedure, in the end we know which morphemes have inherent accentual properties and which ones do not.

This is not the case in Spokane and Moses-Columbia. In these languages the default clause neutralizes the opposition between marked and unmarked suffixes. Stress on the root as in $n-ciq=le\text{'x} \text{"-n-t} ‘dig the ground (sg.)!’ suggests that the element is accented. On the other hand, stress on the lexical suffix as in $n-x \text{"ist}=\text{étik} \text{"} ‘walk in the water’ is ambiguous. It might be triggered by the lexical accent of the suffix or the default (stress the rightmost vowel). We can never, therefore, tell what is the exact accentual status of a lexical suffix, unless it is disyllabic with initial stress.

In Lillooet, marked patterns are detectable only in short forms, e.g. $súp=\text{ús-\v}{m}$ ‘to scratch one’s face’ vs. $c’aw'=\text{ús-\v}{m}$ ‘to wash one’s face’. In polysyllabic words, boundedness, triggered by high-ranking ER-R, and rhythmic factors such as quantity sensitivity and footing, blur the effects of lexical marking, $naq \text{"}=\text{āw}t \ ‘to steal a ride (e.g. on a train)’, $súp=alús-\v{m}$ ‘to scratch one’s eye’. This language shows us that a change towards the direction of a fixed stress system is enhanced when more prosodic factors cooperate with (head) faithfulness constraints.

In the next section I move on to the accentuation of the morphological word and I claim that the Salish languages exhibit a stricter dependence on headedness than Greek and Russian.

**The Morphological Word**

As mentioned in the introduction of this chapter, the morphological word is the scope of purely syntactic processes. It includes, besides the root (and the lexical suffix), transitive and intransitive markers. All predicative words are either transitive, incorporating specific reference to the object or goal of an act, or intransitive. Unsuffixed roots are intransitive. There are also many suffixes which create complex intransitive structures.

All transitives are marked by the suffix /-t/ and are further inflected for person. There are also several complex transitive increments expressing
directive, relational and other meanings. Transitives incorporate pronominal subject and object.

Aspect is marked partly by affixes and partly by particles and auxiliaries. Only aspectual suffixes are discussed here. Aspectual stems are also intransitive and express a range of meanings: habitual, translocational, iterative, developmental, resultative, and so on. The subject in intransitives is a clitic. Most intransitive words can be extended by suffixes which add special notions about the status or opinion of the referents in relation to the real world. These suffixes add a modal flavor to the predicate.

The second part of Chapter 5 consists of two major sections: §5.6 discusses stress in transitive formations, and §5.7 stress in intransitive formations. The main claim is that Salish languages are head-stress systems at the level of the morphological word. This means that stress is totally dependent on morphosyntactic headedness.

### 5.6. Accentuation in Transitive Formations

Transitive inflection adds sequences of object and subject suffixes to stems formed with the transitive marker /-t/. Several special suffixes may precede this marker, yielding specialized notions such as directive, indirective, relational32 or causative. The morphological structure of a transitive formation is as follows:

(91) \[ \text{ROOT} = \text{LEXS-DIR/INDIR/REL/CAUS-TR-O-S} \]
    \[ 4\text{k}^\text{min}-t-sem-es \quad \text{‘remember-REL-TR-O-1sgS’} \]
    
(Thompson)

Transitive formations exhibit a stronger type of head-dependence than Root=LexS predicates. Let us have a look at the following examples from Thompson. The inherent accentual properties of roots are given between slashes.

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32 Indirective transitives focus on the person affected by the action, but also simply imply another object—corresponding to ‘ditransitive’ verbs in more familiar languages. However, the focus of these forms is exactly the opposite of the focus of English ditransitive verbs: whereas in English one gives something to someone, in Salish one benefits someone (direct object) with something (indirect object). Relational markers refer to objects toward which the subject is moving in relation to whom/which the action is accomplished.
The root in (92a) is unmarked whereas the root in (92b) is accented. In both cases stress is on the root. Only with unaccentable roots does stress land on another morpheme. For example, in (92c), stress is on the leftmost stressable vowel after the root. Notice that in this example the root is preceded by the stative prefix, and can therefore not be extrametrical. The ultimate confirmation for the unaccentability of the root comes from (92d). Here, the schwa is stressed despite the fact that there is a full vowel in the word.

Now let us see how similar constructions are stressed in Spokane. Some transitive examples are listed in (93). In these examples, not only accented but also unmarked roots are stressed. This is surprising because, according to the default clause, prominence in unmarked words like (93a) is expected to be on the rightmost full vowel. Stress is on a suffix only with unaccentable roots as in (93c).

The Spokane data is not unique. Exactly the same phenomenon appears in Moses-Columbia. Default prominence in this language is also on the rightmost full vowel. However, the word in (94a) is stressed on the root even when other (full) vowels occur further to the right.
Moses-Columbia transitive paradigm

(94)  

a. kʷú̱n-min-t-∅-n ‘I’m borrowing it’  (CH 251)  
   \(\text{borrow-REL-TR-3O-1sgS} \)  (UnM /kʷú̱n/)  

b. má̱kʷ-4-t-sa-xʷ ‘you broke my X’  
   \(\text{break-INDIR-TR-1sgO-2sgS} \)  (Acc /má̱kʷ/)  (CH 230)

The default clause in all three languages is revealed when the root lacks a full vowel. In such cases, stress is on the leftmost full vowel in Thompson (95a) and the rightmost full vowel in Spokane (95b) and Moses-Columbia (95c).

(95)  

a. 4okʷ-mí̱n-t-sem-exʷ ‘you remember me’  (Th&Th 73)  

b. tq-n-t-es-ín ‘I hit you (sg)’  (Carlson 1972:40)  

c. kas/hawʷ-y-mí̱x ‘he’s going to be born’  (CH 201)

Interestingly, the root is not the only constituent that bears stress in transitive formations. When the number marker /-iyxs/ occurs in the string, it bears stress.

(96)  

plural formations

a. wik-t-iyxs ‘they see him/her/them’  (Th&Th 80)  

b. kʷenme-t-iyxs ‘they judge him/her/them’  

c. cʷqʷ-xi-t-iyxs ‘they write to him/her/them’

The question that naturally arises at this point is why specific morphemes are stressed although prominence is expected elsewhere. It is clear that marking properties are respected. This is demonstrated by unaccentable roots particularly, which force their accent outside their territory. The default accentuation is not discarded because it emerges when there are no full vowels in the string.

The facts above can be easily accounted for under a stricter form of head-dependence. Let us consider the internal structure of transitive formations.

Roots in Salish combine with various suffixes to derive predicates, and predicates combine with various other suffixes to derive clauses. The tree in (97) depicts the internal structure of a Thompson transitive clause. Following Jelinek and Demers (1994), I assume that Trans is a functional head that assigns case to O. The root raises to Trans and the pronominal arguments to their associated functional head (FP). I refrain from labeling the functional head as

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33 Roots with a phonetic schwa behave the same as roots with a full vowel, e.g. pcškʷ-’es ‘be made a leaf’ (Th 228), ?šxe-s-t-∅-es ‘make s.o. sneeze’ (Th 8).
Tense because it has been claimed by Davis and Matthewson (1997), amongst others, that Salish languages lack a unitary Tense category. There is no separate functional head which locates events in time. Instead, Tense is decomposed into its component functions. For example, Davis and Matthewson propose that the functional head Fin(ite), performs a subset of the functions performed by English Tense.

\[ FP \]
\[ [[[\text{nes}_j]-t]+\text{sem}_k+ \text{ex}^w_{i}] \]
\[ \text{TransP} \]
\[ [[[\text{nes}_j]-t]+\text{sem}_k] \]
\[ \text{Trans} \]
\[ VP \]
\[ S \]
\[ \text{V} (\text{root}) \]
\[ \text{V}^r \]
\[ t_l \]
\[ t_j \]
\[ t_k \]

\[ \text{nés-t-sem-ex}^w /\sqrt{\text{convey-TR-1sgO-2sgS}}/ \] ‘you convey me’ (Th&Th 63)

There are also transitive elements that have benefactive/indirective (for the benefit of), relational (with respect to) or directive (for, to) meaning. I assume that such constructions are derived by preposition incorporation to the predicate. On the other hand, causative constructions are derived by incorporation of the predicate to the causative head (Baker 1988). In this case, the root incorporates to the causative head and then raises to Trans.
My proposal is that the syntactic structures above can account for the stress facts in (92-94). In these structures the highest (functional) head is Trans. However, the suffix /-t/ is vowelless and consequently, cannot bear stress. The next step would be to examine whether the lower head qualifies to bear stress. This is the root in (97) and the causative in (98). The root in (97) has a vowel and a lexical accent. Therefore it hosts stress. The causative marker, on the other hand, is vowelless and, as expected, stress must rely on the phonological properties of the immediately lower head, namely the root. In sum, stress is determined by the highest head, or more precisely, the highest head with a (full) vowel, in the syntactic tree.

The ultimate verification that the morphosyntactic head controls accentuation comes from plural formations. According to recent proposals (Johnson 1990, Hoekstra and Hyams 1995), Number heads its own projection. In our examples, Number stands higher than Trans and, consequently, is the highest head in the structure and bears stress. Extra evidence from intransitive formations in §5.7 verifies that accentuation in the morphological word is indeed head-controlled. Aspectual and modal heads attract stress from roots and other constituents of the word.

To summarize, stress assignment in the morphological word is head-controlled. Stress is either on the accent of the head element or the head itself. This algorithm describes a head-stress language with lexical accents. In Chapter
I claimed that the algorithm is derived by the following ranking:

\[(99) \text{ranking for head-stress systems with lexical accents} \]
\[\text{HEADFAITH} \gg \text{HEADSTRESS} \gg \text{STRUCTURAL, FAITH} \]

Heads are not obligatorily stressed because HEADFAITH dominates HEADSTRESS. This domination hierarchy allows unaccentable morphemes to realize their floating accent outside the morpheme that sponsors them. No other constituent than the head, however, can impose its inherent accent to the word because the ranking HEADSTRESS \gg STRUCTURAL guarantees that unmarked heads will be stressed.

To conclude, in the morphological word we find a situation in which morphosyntactic structure is mapped into prosodic structure and the function that performs the mapping assigns stress to the syntactic head of the word. This is a type of obligatory head dominance: the head has to be stressed even if it is not marked with a lexical accent. Such systems are predicted to exist according to the stress typology discussed in Chapter 1 due to high ranking of another type of head constraint, namely HEADSTRESS. This constraint demands that any morphosyntactic head is stressed regardless of whether it is equipped with pre-assigned metrical structure or not. HEADSTRESS does not invalidate HEADFAITH because accented and unaccentable roots can reveal their markedness. This implies that HEADFAITH \gg HEADSTRESS. Because HEADSTRESS is in a relatively high ranking, simple faithfulness cannot exercise any power in forming outputs. The ranking hampers accents that belong to constituents other than the head.

Unaccentable roots substantiate the proposed ranking in a straightforward way. As mentioned earlier, such roots realize their inherent accent outside their morphological domain because of *DOMAIN. Ranked below *FLOP and above HEADSTRESS, this constraint forces a floating accent outside the domain of the morpheme that introduces it. The fact that the floating accent lands on the subject suffix in \textit{caq-n-t-én} ‘I place it’ (93c) shows that FAITH(HEAD) is also ranked low. The tableau in (100) exemplifies the accentuation of this word.

*DOMAIN has no effect on accents that are linked to their sponsor because it is dominated by *FLOP. Examples like (92b), \textit{k'én-xi-t-es} ‘catch (s.t.) for s.o.’, support this ranking.
The second candidate, (100b), is rejected because an input lexical accent has been deleted in the output. This form is stressed by default on the rightmost (full) vowel. The third candidate, (100c), realizes the inherent accent but on the root triggering violation of *DOMAIN. The most optimal candidate is the first one (100a). This candidate complies to head faithfulness constraints. The violations of HEADSTRESS and FAITH are negligible given the ranking these constraints occupy in the hierarchy.

We should emphasize the crucial role of the default constraints in determining the landing position of the floating accent. For instance, in the Thompson word ɹes/qɪ$m-s-t-s$em-es ‘s.o. already spoke to me’ stress is on the leftmost vowel and not the rightmost one under the influence of ALIGN-L. The lexical accent is still located very close to the left edge of the word.

Alignment constraints are also in force when HEADSTRESS is in charge of accentuation. The word ɹemú$t-ø-en ‘I left him at home’ from Spokane shows that first, the unmarked root/head is obligatorily stressed and second, the exact position of stress is determined by ALIGN-R. The root/head is stressed on the rightmost vocalic peak because this position best satisfies HEADSTRESS and ALIGN-R.

(101)

<table>
<thead>
<tr>
<th>input: ɹemú$t-ø-en</th>
<th>HEADSTRESS</th>
<th>ALIGN-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ɹemú$t-stn</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b. ɹemútsten</td>
<td>**!</td>
<td></td>
</tr>
<tr>
<td>b. ɹemú$tstén</td>
<td>*!</td>
<td></td>
</tr>
</tbody>
</table>
Vowelless heads or heads with an epenthetic schwa fail to be stressed. In such cases stress is on the rightmost full vowel for Spokane and Moses-Columbia or the leftmost full vowel for Thompson. I present the accentuation of the Spokane word *tq-n-t-es-ín* ‘I hit you (sg.)’ in (102). Evidently, the candidate with final stress (102a) prevails over the one with pre-final stress (102b).

(102)

<table>
<thead>
<tr>
<th>Input: tq-, -n, -t, -es, -in</th>
<th>ALIGN-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. tq-n-t-es-ín</td>
<td></td>
</tr>
<tr>
<td>b. tq-n-t-és-in</td>
<td>*!</td>
</tr>
</tbody>
</table>

In Lillooet Salish the effects of HEADSTRESS are concealed by the edgemost rule that assigns prominence to the rightmost foot. Thus, the root does not always bear primary stress but it definitely hosts secondary stress in long forms. Some examples are listed in (103). HEADSTRESS exercises influence in forming outputs in intransitive formations.

(103) **Lillooet transitive formations**

| a. cúm-ɔ-k-an | ‘tell-3sgO-1sgS.INDIC’ (E 174) |
| b. cúm-tumul-k-ax | ‘tell-1plO-2sgS.INDIC’ (E 174) |
| c. xʷit̓ams-k-an | ‘whistle-3sgO-1sgS.INDIC’ (E 175) |
| d. xʷit̓ams-túmuł-k-an | ‘whistle-2plO-1sgS.INDIC’ (E 175) |

To summarize, in this section I have shown that stress in transitive formations is predictable. However, predictability does not hinge on phonological principles but on morphosyntactic ones: the (highest) head in the syntactic tree controls accentuation in two ways; either by promoting its inherent accent as the primary stress of the word or, in the absence of a lexical accent, by attracting stress from non-heads (i.e. incorporated prepositions, subject and object suffixes). Only in Lillooet rhythmic principles, mainly pertaining to boundedness, conceal the effects of head-dominance. In conclusion, the Salish languages display a stronger form of head-dominance at the level of the word than at the level of the stem. Systems with this behavior are called ‘head-stress systems with lexical accents’ in this study.

One may wonder, however, what the explanation is for the accentual split between stem and word morphological structure. This question is addressed in the next section which completes the presentation and analysis of the Salish stress facts.

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35 This suggest that PK-PROM is ranked above HEADSTRESS.
The ranking that accounts for stress on transitive formations in Thompson, Moses-Columbia and Spokane is summarized in (104).

\[ \begin{align*}
\text{HEA} & \text{DFA} \text{I} \text{T(HEAD)}, \text{*FLOP} \\
\text{*DO} \text{M} \text{AIN} \\
\text{HEA} & \text{D} \text{STRESS} \\
\text{FA} \text{I} \text{T(HEAD)}, \text{DEFAULT} \end{align*} \]

- *FLOP >> *DOMAIN k\text{\gun}\text{\nd}-x\text{\nt}-\varnothing-\text{es} (92b)
- HEADFAITH(HEAD) >> *DOMAIN >> caq-n-t-\text{\nd} (100)
- HEADSTRESS >> FAITH, DEFAULT ?em\text{\nt}-st-\varnothing-en (101)

5.7. Accentuation in Intransitive Formations

Verbal phrases can be assigned an aspectual, modal marker or a reflexive suffix. In both cases the whole form is intransitive and the subject is a clitic. Here, I leave aside reciprocal and reflexive formations\textsuperscript{36} and focus on aspectual and modal phrases.

Aspectual and modal morphemes appear as suffixes placed after the root. There are also some aspectual prefixes but these will not concern us here. In such formations stress is always on the aspectual and modal morpheme regardless of the accentual properties of the root (predicate). Some representative examples from Thompson are listed in (105). Moses-Columbia and Spokane are similar in this respect.

\textsuperscript{36} Due to space limitations the accentuation of reciprocal and reflexive forms can not be discussed here. The reflexive and reciprocal suffixes attract stress, p\text{\dze}n-t-w\text{\nd} ‘meet each other’, k\text{\nt}\text{\nd}-n-c\text{\nt} ‘look at oneself’ (Thompson). The assumption here is that these constructions are derived by head movement. Both suffixes relate to independent roots (wax\textsuperscript{\dwa} ‘interweave’, sut ‘possession, my own’) suggesting that the reflexive/reciprocal element in fact has the status of a ‘light verb’ (Hale and Keyser 1993) to which the VP (root) incorporates (Revithiadou 1997e).
Based on the theoretical framework of head dominance, I propose that stress in (105) is dependent on the syntactic organization of aspectual and modal phrases. Aspectual and modal suffixes are the functional heads of AspP and ModP to which the root incorporates. This is shown in the syntactic trees in (106):

It is evident that the highest head node, that is the aspectual/modal suffix and not the V (root), determines the position of primary stress in the phrase. As in the transitive paradigm, heads are obligatorily stressed.37

An immediate consequence of the stress system described here is that it neutralizes the accented/unmarked opposition in the aspectual and modal suffixes. Disyllabic suffixes could possibly shed some light on potential

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37 Vowelless heads do not attract stress. The autonomous suffix /nyx/ is never dominant, e.g. n/-kím/-nyx ‘he gets in’, wáx/-nyx ‘we show up’, q”/-nyx ‘[person] moves around’ (Th&Th 101).
aspectual or modal markers with inherent accentual properties but unfortunately, these are not found in the corpus. The only disyllabic suffix, the translocational /-ulu/ from Thompson, has initial stress. As I show later, the accentual shape of the suffix most probably results from the influence of the default constraints (i.e. prominence to the leftmost full vowel).

There is one unaccentable aspectual marker, the resultative suffix /-e/ which emphasizes the recent, often sudden, completion of an activity or change of state. The unaccentedness of the suffix is revealed in examples such as /es-t/xˌɹt-e kn ‘I feel refreshed’. In this example, stress is on the root although it has a schwa. The transitive form xˌɹt-és ‘refresh s.o.’ shows that the schwa of the root is not phonemic.

We infer, from the above, that functional heads are obligatorily stressed, unless they are unaccentable. The constraints that play primary role in stress assignment are HEADFAITH and HEADSTRESS. As shown in §5.6, these constraints are ranked as follows: HEADFAITH >> HEADSTRESS. Intransitive formations empirically support this ranking.

The example /es-t/xˌɹt-e ‘I feel refreshed’ from Thompson clearly establishes the ranking between head constraints. When the aspectual marker/head is unaccentable, the floating accent is forced upon a neighboring morpheme. More specifically, this example suggests that first, the accent of the aspectual morpheme does not get lost because HEADFAITH(HEAD) is high ranked. Second, the accent is realized outside the domain of the aspectual suffix in compliance with *DOMAIN which must also be prominent in the hierarchy. These two conditions are satisfied at the expense of HEADSTRESS and FAITH. However, the violation of these constraints is negligible given their low ranking in the system.

The effects of default prominence are clearly demonstrated by examples with disyllabic suffixes such as /huqʷeʔ-ʊlu/ ‘go out somewhere to drink’. Here,
stress is on the initial syllable and not the final syllable of the suffix. Keep in
mind that this example comes from Thompson which has default prominence on
the leftmost (full) vowel. Let us see how initial stress on the suffix arises.

In (108) the first two candidates are better than the third one because they
comply the head constraint. However, (108a) is chosen over (108b) because it
best satisfies ALIGN-L (default to the leftmost vowel).

(108)

<table>
<thead>
<tr>
<th>Input: ?uqʷeʔ- -ulu</th>
<th>HEADSTRESS</th>
<th>ALIGN-L</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ?uqʷeʔ-ulu</td>
<td>**</td>
<td></td>
</tr>
<tr>
<td>b. ?uqʷeʔ-ulu</td>
<td>***</td>
<td></td>
</tr>
<tr>
<td>c. ìʔuqʷeʔ-ulu</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

We conclude that the same constraint system that derives head dominance
effects in transitive words is active here as well. Without doubt, Salish
languages convert to head-stress systems at the level of the morphological word.
Only heads reveal their accentual properties; other accents are outlawed.

In §5.4, we have seen that in Lillooet Salish, prosodic constraints, and
especially ENDRULE-R, conceal the effects of head dominance. This is mostly
due to the fact that the (highest) head in transitive constructions, namely the
root, is more distant to the right edge than the aspectual and modal morphemes
reviewed here therefore, they are more prone to violate the three-syllable-
window (imposed by the high ranked ENDRULE-R).

Interestingly, head-dominance is revealed in aspectual/modal phrases, as
shown in (109). Notice that the suffix /-ul/ in (109b), is monosyllabic but still
manages to attract stress from the root. Similarly, the suffix /-nuxʷ/ in (109c)
forms a monosyllabic foot which also bears primary stress. These two examples
show that HEADSTRESS dominates FtBIN. The tableau in (110) illustrates the
effects of this ranking.

(109) aspectual and modal formations in Lillooet
a. ʔuyt’-míx ‘sleep (ʔuyt’) all the time’ (E 124)
b. kiʔkl’-úļ ‘always lazy (kiʔkl’)’ (E 124)
c. nʔucʔaʔ- nuxʷ ‘to make it through the winter,
till spring (nʔucʔaʔ)’ (E 124)
d. q’ix-wif’x ‘to get hard (q’ix)’ (E 125)
In this section I showed that morphosyntactic structure influences prosody. The function that performs the mapping assigns prominence to the head constituent in the syntactic tree. Head dominance is expressed as follows: prominence on the lexical accent of the head or just prominence on the head. This latter characteristic distinguishes stress in the morphological word from stress in the morphological stem in Salish. Systems with obligatory stress on the head are called head-stress systems as opposed to head-dependent systems, which simply give priority to the head constituent.

The question that arises at this point is what triggers the dichotomy between stem-stress and word-stress. Why do non-head elements have a chance to influence stress in incorporated constructions but not in (in)transitive ones?

A possible explanation would be to attribute the accentual dichotomy to morphosyntactic reasons. More specifically, one could argue that lexical suffixation is a lexically flavored syntactic operation as opposed to word formation, which is clearly the byproduct of syntactic rules. This hypothesis receives extra support by the fact that in Salish, the incorporated element is a suffix and not an independent noun. In other words, lexical suffixation is lexically predetermined. It is needed to establish the appropriate configuration in which complex expressions can be licensed. On the other hand, grammatical markers and subject and object suffixes have a certain degree of autonomy. Whether they incorporate to the root or not is decided by syntactic rules during word formation and not in the lexicon.

In conclusion, the special bond between a root and a lexical suffix can offer the basis to explain head-dependence. Lexical suffixes not only satisfy the argument structure of the root, but they also extend their lexical meaning. Perhaps this relation allows them to take charge of accentuation by promoting their own lexical accent when the root is unmarked. This relation cannot hold between a root and an object or a subject suffix, for example, because the latter morphemes are not lexical extensions of the root but simply its arguments.

Undeniably, this issue requires future research because it suggests that head-dependent systems are more likely to be found in languages in which word formation results from morphological rules, whereas head-stress systems seem to be more common in languages in which word formation is the byproduct of syntactic operations.
To conclude, there seem to be structural differences between stem and word formation that could possibly account for stress differences between the corresponding constructions. Until future research provides more definite answers to this question, I assume that there is a head-dependent phonology in the stem level and a head-stress one in the word level.

5.8. Another View on Salish Stress: Czaykowska–Higgins (1993a)

The accentuation of Salishan languages has been the focus of interest for many researchers. Here I review Czaykowska–Higgins’s (1993a) analysis of the Moses-Columbia stress system.

Czaykowska–Higgins argues that the basic stress rule in Moses-Columbia, called ‘Columbian Foot Rule’ (henceforth CFR) creates a right-headed unbounded foot. CFR is a cyclic rule. The evidence for this assumption comes from examples like \(k^wúln\-min-t-\emptyset-n\) ‘I’m borrowing it’ (94a), \(máš^w-\emptyset-t-sa-x^w\) ‘you broke my X’ (94b), which are stressed on the root and not on the rightmost suffix (i.e. the subject). These examples also imply that subject, object suffixes and directive markers are non-cyclic morphemes.

The algorithm is completed with the ‘Word Stress Rule’ (henceforth WSR) which assigns prominence to the leftmost grid position on line 1. This rule is responsible for leftmost prominence in a sequence of epenthetic vowels. An illustrative example of how this stress algorithm works is given in (111). Notice that CFR applies vacuously in the non-cyclic suffixes.

(111)   accentuation in Moses-Columbia
        cycle 1
        input      \(k^wúln\)
        CFR
        line 1      *
        line 0      (*)
        \(k^wúln\)

non-cyclic
        *
        input      (*)      *
        \(k^wúln\-min-t-\emptyset-n\)
The picture is somewhat different in lexical suffixation. The root $kw^u\ln$ appears without stress as opposed to the root $ma^f\w$, which is stressed. The accentual divergence between the two types of roots is illustrated by examples (68a) and (68e), repeated here as (112a) and (112b), respectively. The situation is further complicated by the fact that often the same suffix can be stressed or not stressed depending on the root, as shown in (112c) and (112d).

\begin{itemize}
  \item[(112)]
    \begin{enumerate}
      \item[a.] $na/m^f\w^{w} = ikn$ `he broke his back'
        \begin{align*}
         LOC/\text{break}=\text{back} & \quad \text{(CH 230)}
        \end{align*}
      \item[b.] $k^w^u\ln = ic^{?} - n - \emptyset - n$ `I borrow a wig'
        \begin{align*}
          \text{\textit{borrow}}=\text{\textit{skin-CTR-TR-3O-1sgS}} & \quad \text{(CH 207)}
        \end{align*}
      \item[c.] $yap/k\w^{a}n = akst - n - \emptyset - n$ `I grab s.o. by the hand'
        \begin{align*}
          LOC/\text{\textit{grab}}=\text{\textit{hand-CTR-TR-3O-1sgS}} & \quad \text{(CH 229)}
        \end{align*}
      \item[d.] $x^g^a \ll^b l = \text{\textit{\w}}$ `turn with hand, stir s.t.'
        \begin{align*}
          \text{\textit{DS/\textit{\w}turn=\textit{hand-REL}}} & \quad \text{(CWB 32)}
        \end{align*}
    \end{enumerate}
\end{itemize}

Czaykowska–Higgins accounts for the above patterns by claiming that roots such as the ones in (112a) and (112c) are marked to impose extrametricality on a following suffix. Extrametricality prevent the CFR to apply and assign stress to that suffix. On the other hand, roots such as those in (112b) and (112d) do not assign extrametricality. As a result of this, the lexical suffix is included in the prosodic structure and is canonically stressed by the CFR.

It is important to mention that extrametricality is inactive in transitive formations, $k^w^u\ln - m\emptyset - n - \emptyset - n$ and $ma^f\w- l-t-sa - x$ because the subject and object suffixes are non-cyclic. Thus, the CFR applies to the root cycle and assigns stress to it.

According to Czaykowska–Higgins, the most important evidence for marking some roots as extrametrical comes from constructions in which a root that is marked as [+Ex] is followed by two lexical suffixes. As the example in (113) indicates, in this case the last lexical suffix surfaces with primary stress.
Here, the extrametricality imposed by the root to the following constituent cannot influence the second lexical suffix, which then naturally attracts stress. Later in this section I argue that such forms are ‘regenerated’.

Extrametricality is canceled only when the cyclic lexical suffix is accented. Czaykowska-Higgins claims that accentedness is a property of a small set of cyclic as well as non-cyclic suffixes in Moses-Columbia. The suffix /=lwás/ in (114a) is accented as opposed to the suffix /=ank/ which is unmarked.

Accented suffixes are immune to the extrametricality imposed by the root. This is because extrametricality affects a line 0 asterisk whereas accented suffixes come with a line 1 asterisk. Therefore, their asterisk can always serve as a head for constituent construction. (115) shows how the derivation works.

38 My account of these facts is that the form xar=lwás is either lexicalized or behaves like Root=LexS compound.
Czaykowska–Higgins presents a meticulous analysis of Moses-Columbia stress that goes beyond the traditional analysis of Salish stress and succeeds in accounting for many different accentual phenomena by means of a unified algorithm. There are, however, some problematic aspects in her proposal.

First, the analysis she presents makes use of a rather peculiar notion of extrametricality. Extrametricality usually refers to a smaller domain lying at some edge of a larger domain which is invisible to metrical rules. Consequently, extrametricality has been used as a diacritic only for elements that stand at edges and under certain circumstances become invisible to stress rules. Suffixes are the most common example of elements that can be diacritically marked as extrametrical. Czaykowska–Higgins, however, introduces extrametricality as a diacritic that is imposed from a root on a constituent that lies at the edge of the word.

Second, Czaykowska–Higgins employs two forms of marking: [±Ex] and [±Accented] for root and suffixes, respectively. However, a third type of marking is implied, namely [±cyclic]. Lexical suffixes, aspectual and modal markers are diacritically marked as cyclic, whereas subject and object suffixes are not. It is important, at the same time, to keep in mind that cyclicity is not tantamount to accentedness because there is a difference between cyclic accented and cyclic unmarked suffixes (cf. (112) and (114)).

All in all, a complicated marking apparatus is invoked to account for the data. Since extrametricality seems to be the least preferred part of the proposal, let us see whether the analysis can dispense with it.

Extrametricality is mainly employed to derive the difference in patterns such as yap/k'án=akst-n-t-∅-n (112c) and x'al'/x'al'=ákst-mn (112d). An alternative approach would be to claim that there are two types of /=akst/ suffixes. The first one is cyclic and hence stress-attracting, x'al'/x'al'=ákst-mn. The second is non-cyclic and hence stress neutral, yap/k'án=akst-n-t-∅-n. The problem with this approach is that we have to accept as a mere coincidence that the cyclic/non-cyclic behavior of the suffix is associated with a specific set of roots. More importantly, it does not explain the existence of cyclic suffixes which lack non-cyclic counterparts and which are stress-attracting with all roots. These are of
course intransitivizers such as aspectual/modal suffixes as well as reflexives and reciprocals. Czaykowska–Higgins lists a couple of examples with reciprocal and reflexive suffixes: \( k'\text{an}=\text{akst-n-t-wáx} \) ‘get married’ (CH 246), \( k'\text{wá}=\text{akst-n-cút} \) ‘bite one’s own hand’ (CH 245).

In conclusion, it seems that dispensing with extrametricality creates more problems than it solves. Intuitively, the accentual discrepancy in forms with lexical suffixes seems to be a property of the root rather than a property of the suffix.

The alternative proposal this thesis offers for Salish stress provides a confined and economical account of the facts. It employs a much simpler form of marking both for roots and suffixes. Roots and suffixes are accented/unaccentable or unmarked. Moreover, the proposal advanced here suggests that the key-factor for stress is morphosyntactic structure. By knowing the syntactic role of grammatical suffixes, we can automatically infer their prosodic status. This is due to the compositional organization of prosodic and morphological structure in such systems.

Another important aspect of the analysis is that it predicts cyclic effects. Only elements that are heads exhibit a cyclic behaviors. The CFR is claimed to be cyclic in Czaykowska–Higgins’s analysis because roots in transitive constructions are obligatorily stressed. In the account presented here, this is derived from head dominance.

What still remains to be addressed is stress in formations like (113). Such patterns constitute the main argument for invoking root-based extra-metricality. Stress on the second lexical suffix is a clear manifestation of cyclicity. This is correct; such formations are instantiations of a second cycle of derivation. This second cycle, however, should be understood in a somewhat different way than the one suggested by cyclic theories.

Thompson and Thompson (1992) argue that Salish languages display the phenomenon of regenerative or secondary formation. There are many words which are based by and large on fully-formed words or at least stems at an advanced stage of derivation. Regenerative words are more specialized in meaning than corresponding primary forms. They are mainly recognizable in terms of their treatment of underlying interconsonantal /n/, their way of dealing with vowels in unstressed syllables, and their stress patterns. The underlying /n/ in primary formations becomes syllabic before homorganic obstruents. In regenerative formations, however, /n/ is not affected, and remains /n/ in the surface form.

In regenerative formations, primary stress is on the newly added morpheme. The base retains the vowel with its distinctive coloring and the stress of the previous ‘cycle’ but with secondary prominence, as shown in (116). Notice that
the base loses stress from any type of suffix, grammatical or lexical. An extra hyphen is added to show the point at which the regenerative suffixation begins.

(116) regenerative formations
a. n/əkʷu-s-τ-ə-əs
   LOC/τ/represent=water-CAUS-TR-3S  fall into the water accidentally’ (Th 456)
   ‘cause several people to
b. zùxʷuxʷ--s-t-ə-əs
   v/strong--CAUS-TR-3O-3S (Th 466)
   ‘help s.o. to be strong’
c. n/əkʷ-e-t-wàxʷ=ús-e-s
   (əkʷ-e-t-wáxʷ ‘they slap each other’, no-...us ‘eyes’)
   ‘he fights with that in view’

It is evident from the above examples that regeneration is a second derivation that targets all types of constructions; transitive, intransitive and lexical suffixation. The driving force of this phenomenon is subject to future research. What is important to emphasize here is that the forms cited by Czaykowska-Higgins are indeed cyclic but in the sense just described. It is not accidental that the root vowel in xʷʷr=akst=átkʷ remains intact and is listed with a secondary stress (Czaykowska-Higgins 1993a:249).

To conclude, it seems that a cyclic approach to Salish stress loses explanatory power and empirical precision compared to the model proposed here.

5.9. Summary and Conclusions of Chapter 5

In this chapter, I have extended the theory of head dominance to Salish languages that have polysynthetic morphology and I have shown that it can successfully account for their complicated accentual phenomena.

The intriguing aspect of these languages is that morphological changes are in step with the syntactic operations with which they are associated. The challenge for the theory developed in this thesis was to test whether prosody can read and interpret morphosyntactic information. To show that indeed prosody is sensitive to morphosyntactic information, I examined two word-constructions in four Salish languages. The constructions at issues were lexical suffixation, a variant of incorporation, and formation of transitive and intransitive clauses.

In lexical suffixation, which to a large extent corresponds to the level of the stem, the Salish languages are head-dependent systems. In this type of formation
the lexical suffix is a complement of the verb to which it incorporates. This subordination to the root/head is reflected in stress. The lexical accent of the root/head unconditionally prevails, but the accent of the lexical suffix surfaces only when the root is accentless. In case both elements lack lexical accents, a language-specific default system applies to accent the string. There is variation in the default pattern Salish languages employ, but head dominance is shared by all of them. In short, the ranking HEADFAITH >> FAITH is the central component of Salish accentuation.

The situation is somewhat different in word formation. Heads in transitive and intransitive paradigms show a stronger determination to control word stress. More specifically, they do not allow any other constituent to take charge of accentuation. At this level Salish is a head-stress system. Functional heads such as aspect and modal markers as well as lexical heads such as VPs (roots) are always projected onto the prosody either by means of their inherent lexical accent or simply by having stress. This stronger form of head dominance is derived by the ranking HEADFAITH >> HEADSTRESS. This ranking banishes marking contrasts in other constituents of the word and it often restricts the scope of default constraints to the morphological domain of the head.

The results of this investigation are summarized in table (117). The numbers refer to examples of a given construction and constraint-rankings in the text.

(117) summary of Salish accentuation

<table>
<thead>
<tr>
<th>Type of system</th>
<th>head-dependent</th>
<th>head-stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of formation</td>
<td>Lexical Suffixation (incorporation): Root=LexS</td>
<td>Trans: ROOT-TR-O-S ROOT-TR-PL Intrans: ROOT-ASP/MOD</td>
</tr>
<tr>
<td>Examples</td>
<td>Th: (41), (42) Sp: (57) MC: (68) Lill: (75), (76)</td>
<td>(92), (95), (105) (93), (95) (94), (95) (103), (109)</td>
</tr>
<tr>
<td>rankings</td>
<td>HEADFAITH, *FLOP &gt;&gt; *DOMAIN &gt;&gt; FAITH &gt;&gt; DEFAULT</td>
<td>HEADFAITH, *FLOP &gt;&gt; *DOMAIN &gt;&gt; HEADSTRESS &gt;&gt; FAITH, DEFAULT</td>
</tr>
</tbody>
</table>

Undoubtedly, the split in Salish accentuation raises questions. Although there is no definite answer at this point, the hypothesis put forward suggests that head-dependence seems to be related to morphologically flavored structures.
This means that lexical suffixation is a lexically predetermined type of incorporation. Lexical suffixes lack an autonomous status. The subordination to the root is part of their subcategorization information. What is left for syntax is the specific way of combination. On the other hand, word formation is purely the result of syntactic operations that exclusively determine the constellation of morphemes in the string. Perhaps syntax is more forceful in promoting its heads than morphology. The validity of the proposed direction is left open for future research.

An important advantage of the account offered here is that it predicts cyclicity from morphosyntactic structure. Only elements in syntactically preeminent positions derive cyclic effects. Consequently, we do not need unmotivated diacritics that group suffixes into the cyclic or non-cyclic component of the grammar. In general, I have shown that the analysis proposed here employs less marking and diacritics than other approaches. This, combined with the fact that in compositional systems one structure is shared by two components of grammar, namely prosody and morphology, undeniably makes our proposal more attractive from a learnability point of view. Prosodic structure is a parsing cue for morphosyntactic structure.

This chapter also emphasizes the fundamental role of default accentuation in head-oriented systems; the directionality of default prominence can highlight or obscure marked/unmarked oppositions. Moreover, prosodic constraints (i.e. TROCHEE, ENDRULE-R, PK-PROM, etc.) that occupy high ranks in the hierarchy can effectively conceal the effects of head dominance. Finally, a comparison of the four accentual systems examined here has made clear that default can have a dramatic influence on the evolution and transition of compositional systems. Lillooet Salish, for example, seems to develop in the direction of a fixed stress system in the future.

A significant conclusion can be drawn with the completion of the case studies in this thesis: radically different and unaffiliated systems such as Greek, Russian and the Salish languages examined here, use the internal organization of the word as the basic guide in the pursuit of prosodic structure.