SALISH DOUBLE REDUPLICATIONS: SUBJACENCY IN MORPHOLOGY*

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The data which form the basis of these conclusions are the reduplicated forms of several Salish languages. In the languages discussed below, reduplication rules interact in a particularly interesting fashion. In Lushootseed (Puget Sound Salish), two quite productive reduplication rules may apply to a single base word, both prefixing a copy of some portion of the base. However, when reduplication applies to an already reduplicated word, it appears to have access only to the reduplicated portion of that word, and not to the phonemic material contained in the base word. I argue below that this is an affect of subjacency; reduplication copies only material contained in a subjacent cycle.

This argument is to a large extent independent of the formalism used to describe reduplication and word structure. However, the particular theoretical framework which I have chosen to describe the reduplication processes and the structure of words in these languages turns out to have interesting consequences. Reduplication is described, following Marantz (1982) and McCarthy (1981), as the affixation of a morpheme consisting of a prosodic skeleton, which is associated by universal rules of copying and association with phonemic material from the base word. This approach nicely describes some otherwise puzzling facts involving the reduplication of words of various

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phonological shapes. The structure of reduplicated words is described by a set of context-free rewrite rules which make reference to the categories *word, stem, root,* and *affix.* The assumption that the structure of a word is represented as a hierarchical arrangement of morphemes makes possible an explicit formulation of the conditions under which one morpheme may be said to be subjacent to another. The question of how infixes are treated in such a theory of word structure arises in connection with an infixal reduplication in two of the languages treated here, and an analysis of infixing in such a framework is proposed. Given this treatment of infixing some apparent counterexamples to subjacency may be seen as entirely consistent with the principle that morphological rules do not have access to material contained within nonsubjacent cycles of a word.

The outline of the paper is as follows. In section 1 I offer an analysis of two reduplication types in Lushootseed and present evidence that in doubly reduplicated forms, reduplication copies only that phonemic material which is contained in the cycle immediately adjacent to the reduplication affix. In section 2 I present apparent counterexamples to this claim from the related Salish languages Thompson and Shuswap, and argue that the structure of doubly reduplicated words in these languages differs in an important respect from the structure of parallel words in Lushootseed. In section 3, I offer an analysis of the word structure of the two sets of languages which accounts both for the differences in the distributional properties of their reduplication affixes and for the apparent violations of subjacency in Thompson and Shuswap, and offer a theory of infixing in a language with concatenative morphology. And in section 4 I discuss various alternatives to a morphologically-relevant version of subjacency which have been proposed, and argue that the facts presented here cannot be handled by these alternative proposals.

1. Lushootseed Double Reduplications

The cases of reduplication discussed in this section are found in Lushootseed (dxʷ|ǝšucid), a cover term used for the Puget Sound dialects of Salish. This discussion relies chiefly on the work of Hess (1966, 1976) and Hess and Hilbert (1976), which deals mainly with the northern Puget Sound dialects (Snohomish, Skagit, and Sauk-Suiattle). I adopt the transcription system of Hess and Hilbert, in which ejective consonants are indicated by superscript, ' ʔ indicates a voiceless lateral fricative, ƛ a voiceless lateral affricate, and c a voiceless dental affricate.

1.1. *Two reduplication types*

The two most common reduplication types in this language are *distributive reduplication* and *diminutive reduplication.* The first of these, used for plurals and repeated or frequent actions, as well as for distributives, is formed by prefixing to a stem a copy of the first *CVC* of that stem. As the following examples illustrate, the reduplicated stem may be either nominal or verbal:

(1)   *Distributives*

a.   yúbil   *die, starve*
      yúbyubil   *they are starving*

b.   gʷ́adil   *sit*
      gʷ́adgʷ́adil   *they are sitting*

c.   pástǝd   *white person*
      páspastǝd   *white people*

d.   badá?   *child*
      badbadá?   *children*

e.   č̓ast   *branch*
      č̓asč̓ast   *branches*

f.   čǝgʷás   *wife*
      čǝgʷčǝgʷás   *look for a wife*

This reduplication can be described using the formalism suggested by Marantz (1982) (following McCarthy 1981), in which reduplication involves the following: (1) affixation of a reduplicative morpheme specifying the configuration of consonants and vowels in the reduplicated portion of the word; (2) the copying of the phonemic melody of the stem; and (3) the association of this copied melody with the reduplicative morpheme. Association is governed by universal principles which specify that association proceeds from the phonemic to the prosodic tier and, in the unmarked case, from left to right in prefixes and from right to left in suffixes. Each C or V slot may be associated with no more than one phoneme, and each phoneme with no more than one C or V slot, and association lines between phonemic and prosodic elements may not cross. All unassociated elements delete. As an example of the operation of these principles, consider the form **paspastǝd**, the distributive of **pastǝd** 'white person'. The surface form of this word is arrived at by prefixing the distributive morpheme CVC to a stem and copying the stem melody. The melody is then associated with the CVC of the prefix

according to the universal association principles outlined above. Because the distributive morpheme is a prefix, association proceeds from left to right (the unmarked case); thus the first three segments of the copied melody are associated with the CVC of the distributive prefix. Conventions prohibiting multiple associations ensure that only the first three segments are associated with C or V slots, and the convention that unassociated elements are not pronounced gives the correct surface form:

(2) dist.   stem
     CVC   CVCCVC
     ||| ||||||
     pasted pasted ⇒ paspasted

The second reduplication type, the diminutive, also involves prefixation. The prefix used to form the diminutive has four allomorphs: a copy of the first CV of the stem, a copy of the first stem consonant, followed by an [i], or either of these prefixes plus glottal stop (CVʔ or Ciʔ). The choice of one of these allomorphs by a stem is apparently not predictable from phonological or semantic properties of a stem; rather it is lexically governed with stems marked to take particular allomorphs. The following forms provide examples of the different diminutive prefixes. Like the distributive, the diminutive may be prefixed to either nouns or verbs. The nominalizing prefix s, which appears in (3b), does not participate in reduplication. Henceforth this prefix will be shown separated from its stem by a morpheme boundary.

(3) *CV Diminutives*
a.   Xáhəb   *cry*
     XáXahəb   *an infant crying*
b.   s + tubš   *man*
     s + tútubš   *boy*

(4) *Ci Diminutives*
a.   gʷədil   *sit*
     gʷígʷədil   *sit down briefly*
b.   bədáʔ   *child*
     bibədaʔ   *small child*

(5) *CVʔ or Ciʔ Diminutives*
a.   táləʔ   *money*
     táʔtaləʔ   *a little money*

b.   buus   *four*
     biʔbuus   *four little items*

Like the diminutive prefix, the stem form of a diminutive may also exhibit allomorphic variation. As the following forms illustrate, the first vowel of the diminutive stem may be reduced to schwa or deleted altogether. Loss of the stem vowel occurs most frequently when the vowel is flanked by voiceless consonants:

(6) a.   yúbil   *die, starve*
          yúyəbil   *small animal dies*
     b.   s + túlekʷ   *river*
          s + tútələkʷ   *creek*
     c.   pásted   *white person*
          pápstəd   *white child*
     d.   dᶻəX   *move*
          dᶻídᶻX(+əd)   *move (it) a bit*
     e.   ʔəpús   *aunt*
          ʔíʔʔəpus ~ ʔíʔʔpus *aunty*

The diminutive may be described in the framework outlined above by prefixing one of the four diminutive allomorphs. The diminutive allomorph consisting of a copy of the first consonant and first vowel of the stem will of course be entered in the lexicon simply as CV, with universal copying and association rules supplying phonemic content. The prefix consisting of the first consonant of the stem followed by [i] may be described in a similar fashion, with a CV prefix. The lexical entry of this prefix, however, has some phonemic content in addition to its specification of the arrangement of consonants and vowels in the morpheme: the V slot is associated in the lexicon ("preassociated", in the sense of McCarthy 1981) with a high front vowel. The convention prohibiting association of a C or V slot with more than one phoneme will prevent the V slot with preassociated [i] from being associated with the vowel of the copied stem melody, and this prefix will emerge as a copy of the first stem consonant followed by [i]. Similarly, the allomorphs of the diminutive with glottal stop will consist of CVʔ, with the final C slot preassociated with a glottal stop.

The weakening or deletion of the stem vowel illustrated by the forms in (5) requires some additional machinery. Stems must apparently be marked to lose their vowel in the diminutive, as they are marked to take a particular

diminutive prefix; though deletion occurs most frequently between voiceless consonants, it does not always happen in this environment. Deletion is no doubt traceable to the fact that at an earlier stage of the language, stress always shifted to the diminutive prefix, leaving the stem vowel unstressed. There is a general tendency in Salish for roots to exhibit vowelled and vowelless alternants, the latter in the presence of stress elsewhere in the word, and in most Salish languages the location of stress is morphologically determined, with particular morphemes (such as the diminutive affix) attracting the stress; thus diminutivized roots tend to lose their vowels. While stress in Lushootseed is phonologically conditioned, falling on the first non-schwa vowel of the word (unless particular stress-attracting suffixes are present), the stress in diminutive forms generally falls on the diminutive prefix in this dialect as well, so the stem vowel in diminutives is left unstressed. The weakening or loss of the vowel is now lexically governed, however, and can be handled by a rule such as the following:

(7)   Stem Weakening Rule
$$V \rightarrow \varnothing \sim \vartheta / [_{\text{dim}} X [_{\text{stem}} C \_\_ Y$$
    applies in lexically marked stems

1.2. Forms with Initial Consonant Clusters

Evidence for the correctness of the description of reduplication outlined above is provided by the behavior of stems with initial consonant clusters. The shape of such stems in the diminutive and distributive is exactly as predicted by the universal conventions on copying and association, given the underlying forms of the diminutive and distributive prefixes assumed above. These cases provide an interesting basis for comparison of the formalism employed above and the older formal accounts of reduplication as a transformational rule which copies a specified sequence of segments. The distributive and diminutive reduplications of stems with initial consonant clusters differ in a significant way. In diminutive forms, only the first consonant of a stem is copied:

(8) a. qʷłay?   log
          qʷiqʷłay? stick
    b. čʎʔa?   rock
          čičʎʔa?   stone

This follows directly from the assumption that the diminutive prefix is C[...] and from the conventions on reduplication proposed in Marantz (1982), and from the conventions on the copied melody to the reduplicative morpheme proceeds. Association of the copied melody

from the phonemic to the prosodic level, phoneme by phoneme, and from left to right in prefixes. Thus the leftmost consonant in (8a) and (8b) is associated with the first C slot. Since the diminutive prefix has only one C slot available for association with copied material, the first consonant is the only one to be associated; the restriction prohibiting multiple associations prevents association of any other consonant with this C slot and, where the V of the diminutive prefix is preassociated with [i], prevents association of any vowel in the copied melody with the V slot of the prefix. Only the first consonant is associated with the prefix, then, and all other segments in the copied melody delete:

(9)   dim.   stem

       i
       |
    C V   C C V C C
    | | | | | |
    qʷ łay?   qʷ ł a y ? ⇒ qʷiqʷłay?

These conventions predict, of course, that a reduplicative prefix which contains two C slots should permit – in fact require – reduplication of both consonants of an initial cluster. Distributive reduplication, which normally copies the first CVC of a stem, does in fact copy the first two consonants in a form with an initial cluster:

(10) a. qʷłay?   log
          qʷłqʷłay? logs
     b. čʎʔa?   rock
          čʎčʎʔa? rocks scattered about

In this case, the convention that the copied melody is scanned, phoneme by phoneme, for possible associations predicts that the first two phonemes of the copied melody – the two initial consonants – will be associated with the available C slots on the prosodic tier. The vowel following the two initial consonants in (10) cannot then be associated with the V slot of the prefix, since such an association would violate the general prohibition against the crossing of association lines. The permitted associations are those shown in (11):

(11)   dist   stem

    C V C   C C V C C
    | | | | | | |
    qʷ ł ay?   qʷ ł a y ? ⇒ qʷłqʷłay?

Thus, in forms with initial consonant clusters, diminutive reduplication copies only the first stem consonant, while distributive reduplication copies the first two stem consonants (but not the stem vowel).[1] This fact follows from independently motivated principles of left-to-right, phoneme-driven association, and from the prohibition against the crossing of association lines.

Given a language with reduplicative prefixes CV and CVC, it is impossible for reduplication to affect stems with initial clusters in any other way. It should be noted that these facts provide a strong argument for the superiority of this treatment of reduplication over a description of reduplication by means of a transformational rule. A transformational rule describing the formation of distributives in Lushootseed would be written as in (12a), with the vowel of the structural description in parentheses, to ensure that no vowel is copied in stems with initial consonant clusters. But this is a feature of this particular rule in this particular language, not a necessary feature of reduplication of CVC, as it is in the framework discussed above. Rule (12a) is no more obviously natural than rule (12b), which would copy the first CVC of a form beginning with a single consonant but only the first C of a form beginning with a consonant cluster. But while both rules are possible in this framework, only (12a), to the best of my knowledge, describes the facts of any natural language.

(12) a.　C(V)C　X
　　　　 1　　2⇒112 (paspastəd, q"q"ʔay?)

　　 b.　C(VC)　X
　　　　 1　　2⇒112 (paspastəd, *q"q"ʔay?)

Thus the analysis of diminutive and distributive reduplication outlined above is confirmed by the facts of reduplication of stems with initial clusters. We can now turn our attention to the interaction of these reduplicative processes.

1.3. *Combined Reduplications*

The diminutive and the distributive reduplications described above may cooccur in a single word. A distributive form may take a diminutive prefix, as in (13d):

(13) a.　badá?　　　　　 *child*
　　 b.　badbadá?　　　 *children (distributive)*

c.　bibadá?　　　　 *small child (diminutive)*
d.　bibadbadá?　　 *dolls, litter (diminutive-distributive)*

In words of this type, the distributive prefix may lose its vowel as a result of the Stem Weakening Rule:

(14) a.　qis　　　　　　　　　　　 *expose*
　　　　 qisqissəd　　　　　　　 *legs partly uncovered*
　　　　 qi + qiš + qis + šəd
　　　　 dim + dist + stem + lexical suffix

　　 b.　sáx"əb　　　　　　　　　 *jump, run*
　　　　 sá?sx"sax"əb　　　　　 *hopping*
　　　　 sa? + sʔx" + sax"əb
　　　　 dim + dist + stem

The most productive pattern of double reduplications, however, involves the formation of distributives from diminutives. In these forms, which presumably involve the prefixation of the distributive CVC prefix to the diminutive form, the phonemic melody of the distributive prefix might be expected to exhibit either of two shapes. If only the basic stem is copied on the segmental tier, the first CVC of the stem should reappear in the distributive prefix, as in (15a). Alternatively, if the entire diminutive form is copied on the segmental tier, the first CVC of the diminutive should be reduplicated, as in (15b). But in fact, the actual form of the distributive-diminutive, shown in (15c), does not correspond to either of these descriptions:

(15) Distributive-Diminutive

		dist.	dim.	stem
		CVC	CV	CVCVC
a.	*bədbibədá?	bəd	bi	bədá?
b.	*bibibədá?	bib	bi	bədá?
c.	bibibədá?	bi	bi	bədá?　*small children*

In (15c), the distributive prefix, normally CVC, consists of CV. The formation of distributives from diminutives is quite productive and invariably follows this pattern:

(16) a.　pástəd　　　　 *white person*
　　　　 pápstəd　　　　 *white child*
　　　　 páspastəd　　　 *white people*
　　　　 pápapstəd　　　 *white children*

---

[1] Surface forms sometimes contain a vowel in the diminutive prefix, but this vowel is the result of epenthesis. Thus, according to Hess (1976), the surface form of 'rocks scattered about' is č'əʔč'ə?č'ə? but the schwa which appears between the first two consonants is clearly identified as epenthetic.

b. gʷədil   sit
   gʷigʷədil   child sits
   gʷədgʷədil   they are sitting
   gʷigʷigʷədil   children sitting

c. č'λaʔ   rock
   č'ič'λaʔ   stone
   č'λč'λaʔ   rocks scattered about
   č'ič'č'λaʔ   gravel

Since reduplication of the first *CVC* of a diminutive would always involve creation of a geminate cluster, one might attempt to account for these facts by positing a rule of degemination. Such a rule would allow the distributive diminutives to be derived as in (17):

(17) dim. stem   dist. dim. stem   dist. dim. stem
      bi bəda? ⇒bib bi bəda? ⇒biθ bi bəda? (degemination)

But there is no evidence for a rule of degemination applying at any other point in this language. Sequences of identical consonants do appear on the surface – even, in fact, as the product of distributive reduplication:

(18) a. lil   far, remove to a distance
     b. ʔulililtab   they were separated (from the group)
        ʔu + lil + lil + tab
        aspect + dist. + stem + transitivizer

Since the *ll* sequence created by copying the *CVC* of the root (where the two root consonants are *l*) is not simplified, degemination, even if it exists, cannot apply to a sequence of two *l*s. But, given this, degemination cannot be invoked to account for the form of doubly reduplicated words with *l* as stem-initial consonant, which also have *CV*, rather than *CVC*, as the distributive prefix:

(19) a. ləgʷəb   youth
     b. liʔgʷəb   little fellow
     c. ləgʷləgʷəb   youths
     d. liliʔgʷəb   little fellows
        liθ + li + ləgʷəb
        dist. + dim. + stem

Thus some other means of accounting for the forms in (18) must be found.

This other means will generalize to all the double reduplications, making a rule of degemination unnecessary.[2]

The generalization to be accounted for, then, is that the distributive prefix consists of *CVC* (or *CC*, before stems beginning in two consonants) in all environments except when prefixed to a diminutive form; in this case, it consists of a copy of the diminutive prefix. These facts will follow from the assumptions below:

(20) a. Each reduplication affix involves a new cycle in the lexicon.
     b. Phonemic material not associated with a C or V slot on any given cycle is erased at the end of that cycle.[3]
     c. Reduplication copies only that phonemic material which is uniquely contained in the cycle immediately adjacent to the affix with which the copied material is to be associated.

Given these assumptions, the derivation of, for example, **bibibəda?** 'small children' proceeds as follows: on the second cycle, the diminutive is formed by copying the entire stem, associating the first consonant with the first C slot of the prefix, and deleting all unassociated material:

(21)
```
dim.              stem
 i
 |
C V              C V C V C
 |               | | | | |
 b   əda?        b ə d a ?   ⇒ bibeda?
```
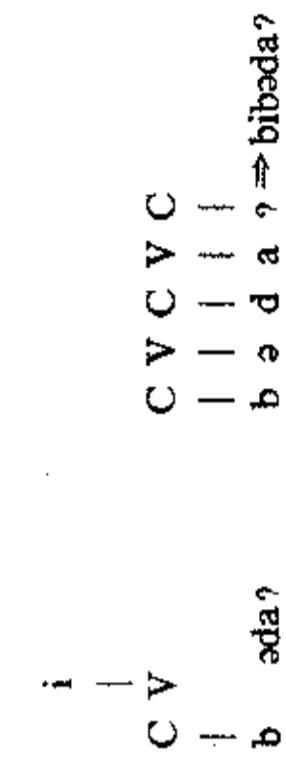
On the next cycle, CVC is prefixed. Principle (20c) prohibits the copying of material from any cycle other than the one immediately adjacent to the distributive prefix, so only the phonemic material associated with the diminutive prefix is available for copying:

(22)
```
dist.          dim.  stem            dist. dim. stem
                i                           i
                |                           |
CVC   CV   CVCVC    ⇒ CVC   CV   CVCVC
       |   | | | |            |   | | | |
       b   b ə d a ?          b   b ə d a ?
```

---
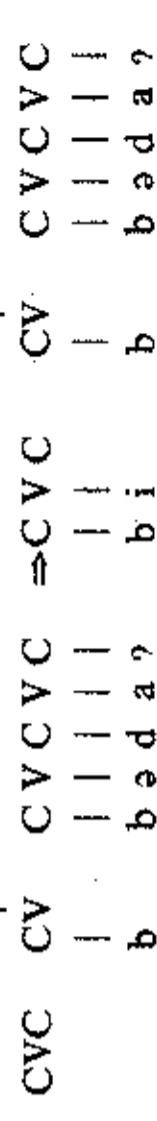
[2] The glottalization of [l] in (19b, c) is a manifestation of a pervasive process in Salish; in many Salish languages, sonorant consonants in diminutivized stems are glottalized. In Lushootseed, it is generally only a stem-initial resonant which is glottalized in the diminutive. This glottalization may be connected to the appearance of a prefix-final glottal stop in some diminutive forms.

[3] The same claim has been made for Tagalog reduplication by Duncan (1982).

Principle (20c) is not unprecedented. Both Siegel (1977) and Allen (1979) have argued for a restricted version of subjacency applying in the word formation component of the grammar. Siegel's condition is as follows:

(23)   The Adjacency Condition (Siegel 1977)
No WFR can involve X and Y, where X is an affix, unless Y is uniquely contained in the cycle adjacent to X.

This condition can be interpreted in the case of Lushootseed double reduplications to prevent the copying of phonemic material across two cycle boundaries, which in doubly reduplicated words makes only the phonemic material associated with the more deeply embedded prefix available for further copying and association with the outer prefix. The Adjacency Condition was motivated, however, by very different sorts of facts; it was proposed as a condition on affixation, one preventing either positive or negative conditions governing the attachment of affixes to bases from referring to features external to the nonadjacent cycle of a base. Thus the word formation rule affixing un- could not apply where the base contained the morpheme dis (*un[dis[courteous]]) – unless dis were on a nonadjacent cycle of the base (un[[disheartened]]), in which case dis was no longer visible to the affixing un. The facts presented above, involving conditions on copying across cyclic nodes, are actually more closely analogous to the sorts of cases which motivated the postulation of the subjacency condition in syntax than to conditions on creation of new structure by affixation discussed by Siegel and Allen.

In section 3 I present an analysis of Lushootseed word structure which makes possible a somewhat more explicit definition of the notion 'cyclic boundary' mentioned crucially in Principle (20c), and argue that if particular affixes are associated with subjacency effects; thus I offer a revised version of Principle (20c) which differs somewhat from Siegel's Adjacency Condition. For the present, however, I will simply assume that some version of subjacency functions as a principle of grammar constraining rules which apply on the level of the word. For the present, too, I will postpone further discussion of Lushootseed word structure and of the exact formulation of Principle (20c) to consider some additional facts: the form of doubly reduplicated words in related Salish languages. The cases discussed in the following section appear, upon first investigation, to be counterexamples to any principle forbidding reduplication processes to refer to material contained in a nonadjacent cycle of a word. In fact, however, the proper analysis of the reduplication processes and the word structure of these languages is entirely consistent with the analysis of Lushootseed offered above, and with the assumption that subjacency operates on the level of the word.

2. DOUBLE REDUPLICATIONS IN OTHER SALISH LANGUAGES

Haeberlin (1918) provides a valuable overview of the formation of distributives, diminutives, and their combinations in a number of Salishan languages. Most of these languages do not provide evidence either confirming or disconfirming the relevance of subjacency to reduplication processes; in Comox, for example, the order of reduplicative morphemes in doubly reduplicated forms is apparently always CV diminutive before CVC distributive, while in Clallam and Nanaimo-Fraser infixation of consonant, rather than reduplication, is used to form distributives. However, the Interior Salishan dialects of Thompson and Shuswap, spoken in south central British Columbia, do have roughly the same sorts of reduplication found in Lushootseed As in Lushootseed, distributives, which consist of C(V)C, occur outside of diminutives, which consist of C(V). The interesting feature of these languages is that their distributive prefix consists of CVC not only on a bare stem but also on a diminutivized noun. Thus in the following example, the CVC of the stem is copied onto the distributive prefix, across an intervening diminutive morpheme:

(24)   Thompson
a.   sil   calico
b.   sísil'   diminutive
c.   silsil   distributive
d.   silsisil'   distributive-diminutive

Glottalization of l in (24b, d) is an example of the glottalization of resonants in diminutivized stems illustrated earlier in Lushootseed forms and discussed in note 2.)

These data suggest that the principle of subjacency in words, even if motivated for Lushootseed double reduplications, cannot be maintained as a universal principle of grammar. However, before the principle that reduplication cannot copy material across two stem boundaries is abandoned along with the general principle of morphological subjacency), additional differences between Lushootseed and the Interior Salish languages should be taken into account. In this section, I offer an analysis of distributive and diminutive reduplication, and note the crucial differences between Lushootseed and Thompson/Shuswap. These differences support the analysis of Lushootseed doubly reduplicated forms given above and provide a principled reason for the apparent violations of subjacency in Thompson and Shuswap.[4]

Haeberlin claims that Lillooet, the other Interior Salish dialect, behaves like Thompson and Shuswap with respect to reduplication. However, he gives almost no data from Lillooet and the one doubly reduplicated form he does provide is formed on the same pattern as double reduplications in Lushootseed.

The following discussion relies on data both from Haeberlin and fr... change in vowel quality and disappearance of some vowels in redupli- authors of more recent studies. I have included, along with Haeberlin's for... forms exhibited in some of the words above is not entirely predictable, additional forms illustrating the same points from Thompson and Thomp... will not be discussed here; these phenomena do not bear on the issues (1981) and from Kuipers (1974). The source of a particular form is indica... er discussion. by the initial of the author or authors (Haeberlin, Kuipers, or Thomp... he diminutive in these languages is also similar to the diminutive in and Thompson). In cases in which Kuipers' transcription of a form dif... ootseed. As in Lushootseed, the diminutive morpheme consists of CV, from that of Haeberlin, I provide his transcriptions as well; the reader sho... with deletion of a stem vowel. In Thompson, this deletion takes place note that Kuipers' forms are phonemic and do not include many phon... all environments except before a laryngeal consonant, according to vowels, which he analyzes as epenthetic. The reader is referred to Kui... mpson and Thompson (1981), though Haeberlin shows the stem vowel (1974) for a discussion of vowel-zero alternations in Shuswap, but shoul... ned in some other environments as well. Deletion in Shuswap depends assured that the differences between Haeberlin's and Kuipers' transcripti... he distribution of sonorants and obstruents in a word; again, a discussion are irrelevant to the argument made here. ese facts would take us too far afield, and the interested reader is referred

Even in my use of Haeberlin's forms, I have differed from him in a... Kuipers (1974). It should simply be noted that these languages will require points of terminology and transcription. Haeberlin uses the term ... plus similar in their effects to the Lushootseed Stem Weakening Rule (rule rather than 'distributive', while I will continue to classify these forms... but different in their conditioning environments. distributives. He uses a macron over a vowel to indicate what is apparen... tenseness rather than length, and I have omitted the macron in these ca... And finally, Haeberlin classifies the two back fricatives of these langua... as a velar fricative, indicated by x, and a "midpalatal" fricative, indicated... x; since these are classified by Kuipers (1974) as uvular and velar, respectiv... I have transcribed Haeberlin's x as X and ẋ as x.

2.1. Distributive and Diminutive in Thompson and Shuswap

The distributive in Thompson and Shuswap (the 'augmentative' of Thomp... and Thompson 1981) consists of a prefixed CVC, as illustrated in (24) a... in the forms below:

(25) Thompson Distributives
a.	qʼúmqən (H)	head
	qʼə́mqʼumqən	distributive
b.	ʔes + Xəp (T)	piled up
	ʔes + XəpXáp	distributive

(26) Shuswap Distributives
a.	s + qáləmuxʷ (H)	man
	s + qalqáləmuxʷ	distributive
b.	s + qelmXʷ (K)	man
	s + qelqlmXʷ	distributive
c.	kicx (K)	arrive
	kəckicx	distributive

(27) Thompson Diminutives
a.	xeʔ (T)	high
	xéxeʔ	a little higher
b.	qʼúmqən (H)	head
	qʼóqʼumqən	diminutive

(28) Shuswap Diminutives
a.	s + qáləmuxʷ (H)	man
	s + qáqáləmuxʷ	diminutive
b.	s + qelmXʷ (K)	man
	s + qeqlmXʷ	diminutive
c.	nóXenoX (H)	woman
	núnoXenoX	diminutive
d.	nóXʷnXʷ (K)	woman
	núnXʷnXʷ	diminutive

Thus far, these reduplications are fairly similar to the corresponding duplications in Lushootseed. They differ, however, in the aspect noted above: a distributive prefixed to a diminutive word copies the first CVC of the ...em, across the CV diminutive:

(29) Thompson
a.	qʼúmqən (H)	head
	qʼóqʼumqən	diminutive

q'əmq'úmqən		distributive
q'əmq'óq'umqən'		distributive-diminutive

b. s + cuw (T) something done; work
  s + cəw'cácəw' distributive-diminutive

(30) *Shuswap*

a. s + qáləmux" (H) man
  s + qáqaləmux" diminutive
  s + qalqáləmux" distributive
  s + qalqáqaləmux" distributive-diminutive

b. nóXenoX (H) woman
  núnoXenoX diminutive
  noXnóXenoX distributive
  noXnúnoXenoX distributive-diminutive

c. noX"nX" (K) woman
  nunX"nX" diminutive
  nX"nuX"nX" distributive
  nX"nunX"nX" distributive-diminutive

Thus Lushootseed and Thompson/Shuswap differ in their apparent respect for subjacency. But they differ in other ways as well. First, while Lushootseed the distributive may either precede or follow the diminutive morpheme, the Interior dialects allow only one order, distributive before diminutive. Second, and more striking, is the fact that while the diminutive morpheme is always a prefix in Lushootseed, diminutive reduplication may be internal in the Interior dialects:

(31) *Thompson Diminutives*

a. s + t'omáll' (H) cow
  s + t'omámall' diminutive

b. q'umé?əma? (H) little
  q'umáme?əma? diminutive

c. q"intwáx" (T) talk to each other
  q"intwáw'x" diminutive

(32) *Shuswap*

a. Xaláx" (H) tooth
  Xalálux" diminutive

b. c'ilá? (H) basket
  c'ilál'a diminutive

the position of the diminutive morpheme in these languages is actually entirely predictable; it is the stressed vowel of the base, along with the consonant preceding it, which is reduplicated.[5] As the forms in (33) show, the distributive morpheme is always prefixal, even in words which make use internal reduplication to form the diminutive:

(33) *Distributives* (H)

Thompson
a. s + tumt'umáll' cow
b. q'umq'umé?əma? little

Shuswap
c. XalXalax" tooth
d. c'ilc'ilá? basket

Doubly reduplicated forms of words with noninitial stress exhibit both prefixal and internal reduplication:

(34) *Distributive-Diminutives* (H)

Thompson
a. s + t'umt'umámall? cow
b. q'umq'umáme?əma? little

Shuswap
c. XalXaláhux" tooth
d. c'ilc'ilál'a basket

Thus while the Interior dialects do appear to violate subjacency, they differ in other ways as well from Lushootseed. Below I will present an analysis of the morphological structure of these languages which accounts for all these differences in a unified fashion. These differences may be summarized as follows:

(35) a. Lushootseed allows the distributive prefix to either precede or follow the diminutive prefix. The Interior dialects allow only one order, distributive before diminutive.

b. Lushootseed diminutive reduplication is always prefixal. In the Interior dialects, the diminutive is expressed by either prefixal or internal reduplication, depending on the stress of the base word.

[5] Kuipers gives Xlex" for 'tooth', so that in the dialect he is describing this form does not illustrate internal reduplication. However, he does analyze diminutive reduplication as determined by the position of the stressed vowel.

c. In Lushootseed doubly reduplicated forms, the distributive, when it precedes the diminutive, consists of a copy of the diminutive morpheme. In the Interior dialects, the distributive copies the first *CVC* of the stem, even across an intervening diminutive prefix.

The following sections offer a theory of the structure of words in these languages which accounts for these facts.

3. THE STRUCTURE OF SALISH WORDS

3.1. *Lushootseed Word Structure*

In this section I assume, following Lieber (1980), Selkirk (1982), and others, that concatenative morphology may be described by a system of context-free rewrite rules and a list of affixes with subcategorization frames. I assume that reduplicative morphemes are affixes which have the properties of other affixes and are treated as such by the rewrite rules. Reduplicative morphemes differ from other morphemes, however, in that whereas most morphemes consist of phonemic material associated with C and V slots on a prosodic tier, at least one of the C or V slots of a reduplicative morpheme is not associated with any phoneme. To account for the variable order of the distributive and diminutive prefixes in Lushootseed, I assume the following structure for doubly reduplicated words in this language:

(36) a. bibədbəda?

```
        word
         |
        stem
       /    \
    dim.    stem
    / \    /    \
   i   - dist.  stem
   |    / \      / \
   CV  CVC      beda?
```

b. bibibəda?

```
        word
         |
        stem
       /    \
    dist.   stem
    / \    /    \
   CVC  dim.   stem
        / \     |
       i   -   beda?
       |
       CV
```
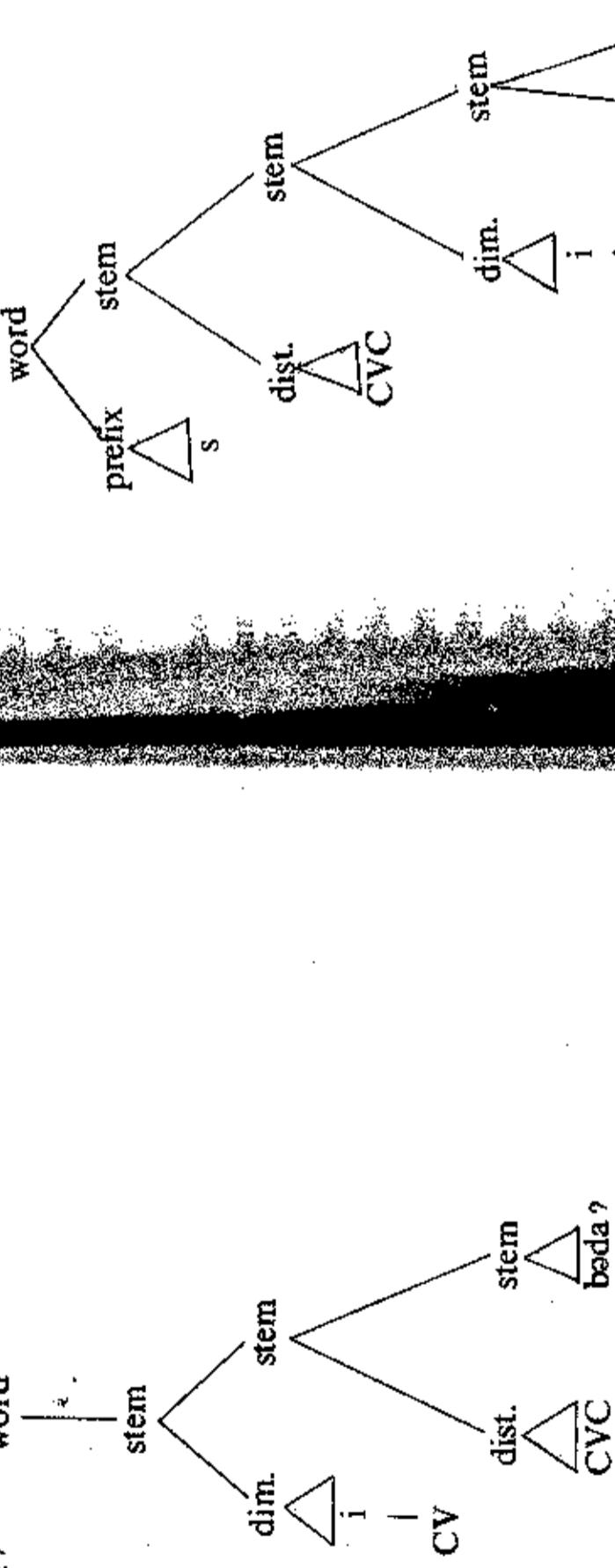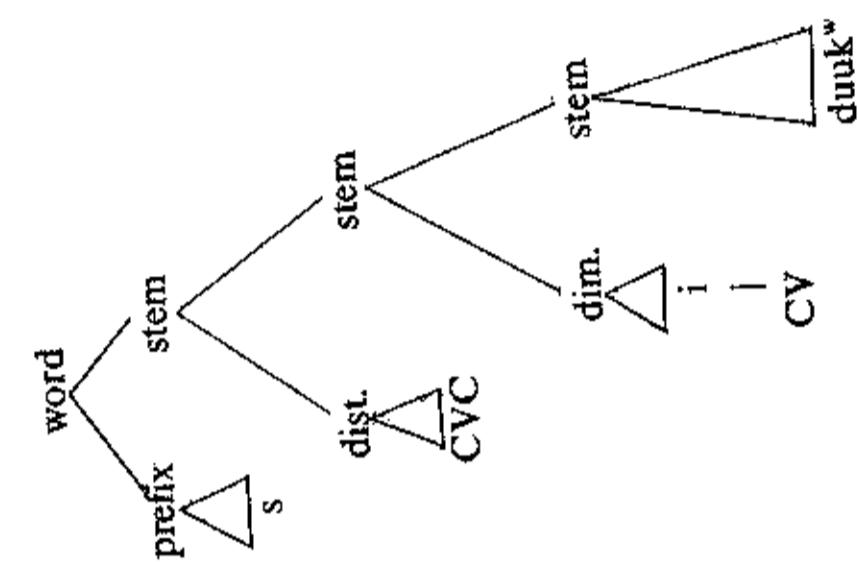
Both the diminutive and the distributive are subcategorized to attach as prefixes to the stem node, and the product of this attachment is another stem. In contrast, the nominalizing prefix s, which occurs outside all reduplication affixes, is subcategorized to attach to a stem to form a word. The structure of a reduplicated nominal in s is as shown in (37):

(37) s+dididuukʷ *small knives* (< s + duukʷ *knife*)

```
         word
        /    \
     prefix  stem
       |    /    \
       s  dist.  stem
          / \   /    \
         CVC dim.    stem
             / \      |
            i   -    duukʷ
            |
            CV
```
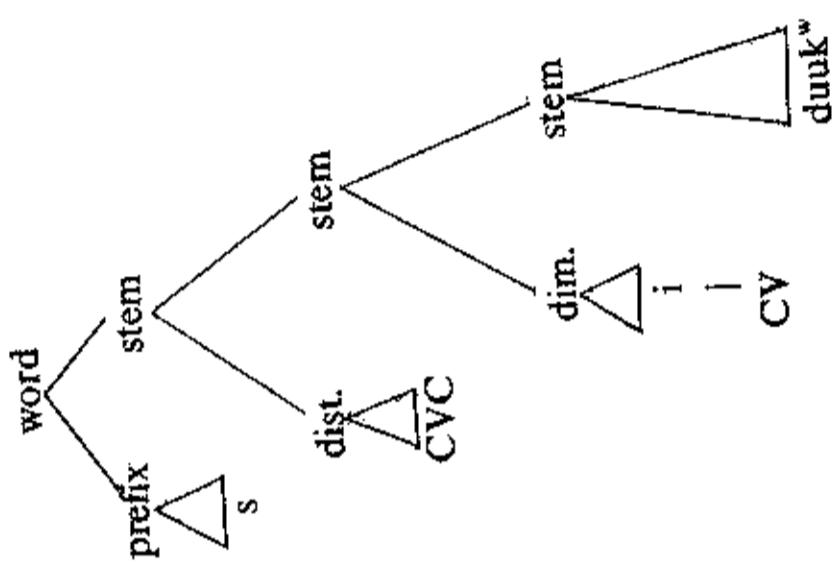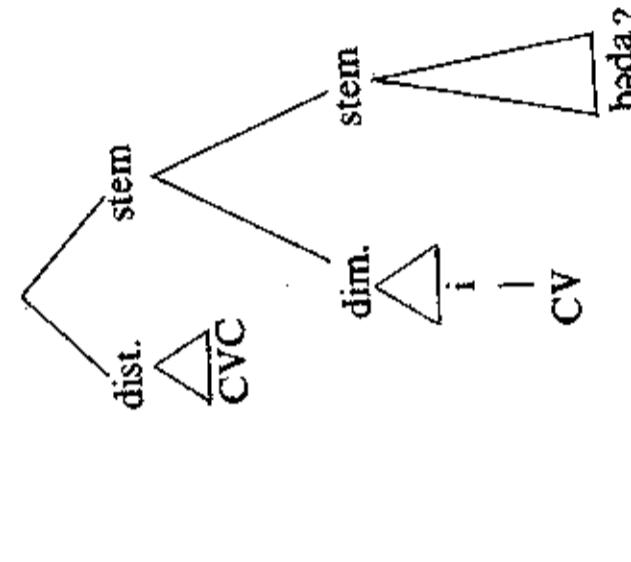
The lexical entries for the nominalizing prefix, the diminutive prefix, and the distributive prefix are as in (38a) (following the notation used in Selkirk (1982), with certain minor differences). Morphemes are characterized as prefixes, suffixes, or infixes, with superscripts indicating the category type of the unit resulting from their attachment to a base (a word for the nominalizing prefix, a stem for the others). The lexical entry also includes a specification of the sort of base to which the affix can attach (a stem, for all of these prefixes). The rewrite rules given in (38b) provide for words consisting of prefix plus stem as well as for stems also consisting of prefix plus stem. (These represent, of course, only a small fragment of the very complex morphology of this language.)

(38) a. s: prefix^{word} ; [__stem]
         dist. (CVC): prefix^{stem} ; [__stem]
         dim. (CV): prefix^{stem} ; [__stem]

     b. word → (prefix) stem
   stem → (prefix) stem

The rules and lexical entries of (38), since they characterize both the distributive and the diminutive prefixes as prefixes which attach to stems and which create stems, allow for the attachment of distributive prefixes to diminutive stems and of diminutive prefixes to distributive stems. They also ensure, of course, that both reduplicative morphemes occur before rather than inside a basic stem, since these morphemes are characterized as prefixes rather than infixes. The rules of (38), then, account for two of the characteristics which are unique to Lushootseed among the languages discussed above: the variable order of the distributive and diminutive prefixes, and the invariably prefixal nature of the diminutive.

The other characteristic which Lushootseed does not share with Thompson and Shuswap, the inability of the distributive to copy material across an intervening diminutive, is handled by the principle of subjacency. The more clearly articulated theory of word structure presented above now makes possible a more explicit definition of subjacency as a morphological principle. The introduction of categories lower than word, such as prefix and stem, raises the question of precisely which sorts of nodes are associated with subjacency effects (that is, are bounding or cyclic nodes). In order for the principle of subjacency to prevent reduplication from copying material across the diminutive onto the distributive prefix, it is necessary that the stem node be considered a bounding node, to prevent such copying from taking place across the two stem nodes which dominate the base stem and the unit *diminutive prefix-plus-stem*). But the possibility of identifying only certain nodes as bounding nodes for subjacency raises the question of which nodes...

...may, are not associated with subjacency effects. If not all nodes are bounding nodes, one would expect cases of the copying of phonemic material across cases, so long as these are not bounding nodes. In fact, copying does apparently take place across two nodes if one or both of them are root nodes. words in the Salish languages are traditionally analyzed as being built, at least historically, on a base consisting of a CVC or CC root. Stems may consist of bare roots, roots plus stem-forming affixes (such as the il suffix of Lushootseed gʷədil 'sit' and yubil 'die, starve') or reduplicated roots. An example of the latter is the word pišpiš 'cat', consisting of the reduplicated (and obviously borrowed) root piš, which does not occur in isolation. The structure of pišpiš is presumably as in (39):

(39)

```
        stem
       /    \
     root   root
      |      |
     piš    piš
```
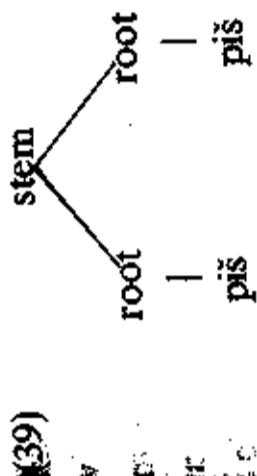
The phonemic melody of this word is available for reduplication (as in pišpiš 'cats'), even though such reduplication involves copying across two boundaries, the stem and root boundaries dominating piš:

(40)

```
        stem
       /    \
    dist.   stem
    (CVC)  /    \
        root    root
         |       |
        piš     piš      piš ⇒ pišpišpiš   cats
```
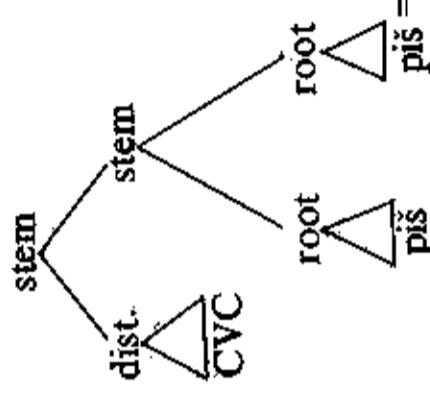
This can be accounted for by the assumption that 'root' is not a bounding node. Thus I am proposing a slightly different interpretation of subjacency than that proposed by Siegel; the Adjacency Condition, extended to reduplication, should prevent the copying of phonemic material across any two brackets, where each word-formation process is assumed to be associated with a set of brackets, while the version of subjacency assumed above prevents copying across two brackets only when these are associated with bounding nodes.[6]

The assumptions that both the diminutive and the distributive morphemes are prefixes which attach to stems and create stems, that 'stem' is a bounding...

[6] It seems reasonable that word, as well as stem, would be a bounding node, but I have no evidence to this effect.

node, and that subjacency prohibits copying of a stem melody across two bounding nodes account both for the variable order of these prefixes in Lushootseed and the phonological form of the doubly reduplicated words. In the next section I discuss an analysis of the word structure of Thompson and Shuswap and a treatment of infixation which accounts for the difference between these languages and Lushootseed.

3.2. Word Structure in Thompson and Shuswap

Doubly reduplicated words in Thompson and Shuswap, it will be recalled allow only one order of reduplicative morphemes; in contrast to Lushootseed, the diminutive affix in these dialects always follows the distributive affix. Furthermore, the diminutive appears either before the base stem or inside it. These facts can be accounted for by assuming that while the distributive in these dialects is, just as in Lushootseed, a prefix which attaches to stems to create new stems, the diminutive is not a prefix at all; rather, it is an infix,[7] where 'infix' is defined as a morpheme subcategorized to attach to a phonological rather than to a morphological constituent. I will argue that the failure of the diminutive morpheme to block association of the stem melody with a distributive prefix on the other side of the diminutive follows from the diminutive's status as an infix.

As noted above, the position of the diminutive morpheme in Thompson and Shuswap depends on the stress of the base stem. This reduplication of a stressed syllable (or some portion thereof) is not unique. Internal reduplication of more than one segment is in general fairly rare in the languages of the world, but when it does occur it is likely to be reduplication of a stressed syllable; this phenomenon occurs in Samoan (Pratt 1878) and in Chamorro (Topping 1973). If the diminutive is analyzed as a CV which is adjoined to the left of the stressed syllable of a word, its appearance as a prefix in some words and an infix in others is no longer mystifying; in fact it is always a prefix, but a prefix to a phonological rather than to a morphological constituent – a syllable, rather than a morpheme.[8] Stress in Thompson and

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[7] The diminutive in the Interior Salish languages is traditionally described as an infix by Salishanists. Both Kuipers (1974) and Bell (1982) argue that in Shuswap, the diminutive is a copy of the consonant preceding the stressed vowel which is infixed after that vowel. Their analyses require a rule epenthesizing a vowel in the environments in which the diminutive appears as *CV*; the analysis offered here requires a rule deleting a vowel in the complementary environment.

[8] The forms given by Haeberlin which are exceptions to the generalization that the first *CV* of the stressed syllable is reduplicated in diminutives are, first, the Thompson form k'ótme? 'mouse', which is stressed on its final syllable but has a prefixal diminutive. Since the cognate

Shuswap (unlike Lushootseed) is morphologically determined, with certain morphemes designated as stress-bearing. The addition of one of these morphemes causes a shift in the position of the diminutive morpheme; the following examples show the result of adding e?ət 'young' to a stem.[9]

(141)   Thompson
a.   s + t'omáłl' (H)   cow
     s + t'omámałl   diminutive
     s + t'omałlté?ət   calf
     s + t'omałltéte?ət   diminutive

b.   qosp (H)   buffalo
     qóiqsp   diminutive
     qospé?ət   young buffalo
     qospépe?ət   diminutive

It should be noted that although the position of the diminutive is affected by the presence of e?ət, the diminutive cannot be said to be prefixed to this morpheme; the material which is reduplicated is actually material from two morphemes, the final consonant of the stem and the initial vowel of the suffix. An attempt to determine the position of the diminutive by reference to morphological structure will founder on this fact as well as the fact that the internal structure of most of the words with internal diminutives is opaque. Thus the diminutive in Thompson and Shuswap, unlike the diminutive in Lushootseed, is prefixed to a syllable; when the onset and the nucleus of that syllable are heteromorphemic, the diminutive appears inside a morpheme. The diminutive is not associated (except perhaps at some more abstract level of representation) with any morphological constituent – unlike the distributive, which prefixes to stems. This fact is clearly related to the apparent transparency of the diminutive with respect to the copying of the stem melody onto the distributive morpheme in forms such as (24d) siɫsisiɫ?, the distributive-diminutive of siɫ. I assume that such words have a surface structure such as the one shown in (42a). The similarities between this form and a form with the diminutive appearing inside the stem, as in (42b), are clear:

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in related languages is stressed on the initial syllable, it seems likely that this represents a mistranscription. The second exceptional form, the Thompson word for 'child', is exceptional in other ways as well. This form is discussed in section 4. The analysis of infixation as prefixation to a syllable is consistent with Marantz's suggestion in unpublished work that infixal reduplication can be analyzed as affixation to some prosodic constituent.

[9] One reviewer pointed out to me that 'buffalo' is q'esp in present-day Thompson.

...ically consistent with the interpretation of subjacency argued for, in ...2. The status of the diminutive morpheme in Lushootseed is clearly ...ent from that of the diminutive in Thompson and Shuswap, and the ...ative and the diminutive in the Interior Salish dialects are demonstrably ...e same sort of affix. The assumption that the diminutive in Thompson ...huswap is an infix which is subcategorized to attach to a syllable, rather ...e a morpheme, allows the copying of the phonemic melody of the stem ...s the distributive to proceed without reference to the presence of a ...utive infix.[10]

...ome evidence exists, in fact, that the Interior Salish languages also obey ...subjacency condition when reduplication would involve copying and ...gation across two cyclic nodes. The Thompson word for 'child', ...lku ?me ?et (H), has both the e?et suffix and the form of a diminutive ...ed by prefixation, though no base word s + ku ?me ?et exists (but compare ...swap sk̓ʷuye (K) 'offspring of self or brother'). The diminutive of this ...rd is formed in the normal fashion, by reduplication of the syllable ...aining e?et. The distributive, however, is irregular, and in a familiar way; ...ead of copying the first *CVC* of the stem, it copies only the first *CV*:

(43)   *Thompson*
  a. s + kuku?me?et (H)   *child*
  b. s + kuk?umame?et   *small child*
  c. s + kukuk?umame?et   *several small children*

...his form is no doubt the lexicalized occurrence of an earlier prefixal ...diminutive. While the form is now irregular, it can be understood as a remnant ...f a stage in which both distributives and diminutives were stem-forming ...efixes. At this stage, apparently, distributive-diminutives were formed by ...duplication of the first CV of the diminutive prefix, in accord with ...ubjacency.[11]

4. ALTERNATIVES TO SUBJACENCY

My aim in the preceding sections has been to offer an analysis of doubly reduplicated forms in several Salish dialects within a particular framework.

[10] The same effect could of course be achieved by assuming that infixation is actually movement of a constituent into a morpheme, ordered after other affixation processes. A discussion of the relative merits of this sort of analysis and a movement analysis is beyond the scope of this paper.

[11] This form is actually exceptional in another respect: Haeberlin marks (43a) with stress on ku, the element which I have analyzed as a diminutive prefix. Since e?et is also a stressed suffix, I assume that it carries secondary stress, which attracts the diminutive infix, and that the failure of the diminutive to attach to the initial syllable ku is related to the fact that this diminutive syllable is analyzed as a diminutive prefix in its own right.

---

(42) a.

b.

The morphological structure of the word is represented on the upper tiers, which include the stem and the distributive prefix. The diminutive, as an infix, is not included in the morphological structure at all; it is attached to a syllable rather than to a morpheme. The domain of the copying operation which is part of reduplication is the material dominated by the sister constituent of the reduplication affix. For the distributive prefix, this is the stem. The sister of the diminutive, however, is the syllable to which it is adjoined. Thus the two domains of copying for these two affixes are disjoint, and each can be provided with phonemic material independently of the other. The failure of the diminutive to block copying of the stem is due not to a failure of subjacency, but rather to the fact that the reduplicative infix and the reduplicative prefix are simply associated with different levels of representation.

Thus the shape of doubly reduplicated forms in Thompson and Shuswap

The analysis of Lushootseed reduplication offered above relies crucially on the notion of subjacency, interpreted as a condition which prevents the copying of phonemic material across two or more bounding nodes, where 'stem' is a bounding node for word-level rules. Various attempts to replace conditions on subjacency in morphology with other conditions on the extent to which rules may refer to the internal structure of words have been offered in recent literature. In this section I discuss these proposals and conclude that none of them is sufficient to account for the data discussed above.

One recently proposed alternative to Siegel's Adjacency Condition is the Atom Condition of Williams (1981):

(44)   The Atom Condition
    A restriction on the attachment of af_x to Y can only refer to features realized on Y.

Given Williams' assumption that features percolate through heads of words, this condition has the effect of allowing reference only to features on morphemes which are heads, since only these features percolate to the node dominating the word. The Atom Condition, unlike the Adjacency Condition, is stated specifically as a constraint on affixation, and as such is not relevant to Salish double reduplications, but a natural generalization of the condition would prevent any morphological process from having access to any features (including phonemic structure) of a morpheme which is not in head position. However, even this generalized version of the Atom Condition will not constrain Lushootseed reduplication in the necessary fashion. To do so, it would have to allow the distributive prefix in a double reduplication to have access only to the diminutive prefix and not to the stem. This would follow from the generalized Atom Condition only if the diminutive prefix could be shown to be the head of a diminutive word. But the diminutive prefix (or infix) in these languages does not have the characteristics of a head; it functions as a modifier both semantically and syntactically. The reader will recall that the diminutive may be prefixed to either a noun or verb stem, and the prefixation of the diminutive produces a form of the same category as the base stem[12] (as illustrated in (3–5); the diminutive is therefore syntactically neutral, and cannot be considered the head of its word under any ordinary definition of the notion head. Thus the facts of reduplication in Lushootseed cannot be described by the Atom Condition, and the Atom Condition cannot therefore replace conditions referring to subjacency.

[12] Facts such as these have led to claims that these languages do not distinguish nouns and verbs (see Jacobsen 1979 for discussion). While this claim is clearly too strong, it does seem to be the case that in this language, as in Semitic languages, the same root may appear in both nouns and verbs, and many stems may also be both nominal or verbal.

A second approach to curtailing the ability of rules to have access to the notion of subjacency, interpreted as a condition which prevents the elements of the internal structure of words is to make this structure invisible at some stage or stages in the derivation of complex words. This is the approach advocated by Pesetsky (1979), Kiparsky (1982), and Mohanan (1982), who assume a framework in which affixation is the product of word formation rules which attach affixes – each rule associated with a set of brackets – and in which cyclic phonological rules apply after the operation of each word formation rule. Conventions on the erasure of bracketing prevent morphological rules from having unlimited access to features of word-internal structure. A very strong condition on reference to internal structure is Pesetsky's Bracketing Erasure Convention, which causes brackets to be erased at the end of each cycle. In the case of Lushootseed, this convention is clearly too strong; it would have the effect of erasing the bracketing which separates the diminutive prefix from its base stem before the distributive prefix is added, eliminating just the sort of information which is needed – the information that the diminutive prefix is a distinct morpheme. Thus the Bracketing Erasure Convention destroys information about the internal structure of words in just the case where such information is necessary. A weaker convention on the erasure of bracketing is that proposed by Kiparsky (and, in a slightly different form, by Mohanan), which stipulates that brackets are erased at the end of a level, rather than at the end of each cycle. The notion of level is borrowed from Allen (1978) and from Siegel (1977), who identify two classes of affixes in English: Class I, associated with morpheme boundary, and Class II, associated with word boundary. The word formation rules attaching these affixes are organized into blocks, with Class I affixation rules applying in one block and Class II affixation rules in a second block, at a later level. This organization of the morphological component into levels, each associated with a block of word formation rules, is designed to account for the fact that Class II affixes may not appear inside Class I affixes and the fact that certain phonological rules appear to apply after the attachment of Class I affixes but before the attachment of Class II affixes. As Selkirk (1982) argues, characterization of an affix as belonging to a particular level is essentially equivalent to characterizing it as subcategorized to attach to a morpheme of a particular type (word, stem, root). Thus, the Bracketing Erasure Convention would predict that word-level affixes (such as the nominalizing prefix s) could not have access to information about the internal structure of stems, but that information about stem-internal structure would be visible to stem-level affixes (such as the distributive and diminutive prefixes). This convention is compatible with the Lushootseed facts in that

it allows information about the internal structure of diminutives to be maintained on the level at which this information is needed. Since both the distributive and the diminutive prefixes are stem-level prefixes, the bracket separating the diminutive prefix from its stem will be present at the point at which the phonemic content of a distributive prefix is provided:

(45) $[_{word}[_{stem} CVC(dist)[_{stem} CV(dim.)[_{stem} X]]]]$

However, this convention does not in and of itself prevent the copying of phonemic material from a stem across a diminutive prefix and onto a distributive prefix; some notion of subjacency is still necessary to prevent this.[13] Thus conventions erasing brackets within words cannot assume all the functions carried out by subjacency; some version of subjacency is still necessary to account for a case like Lushootseed double reduplications, which reduplication must have access to internal structure in order to know which phonemes it cannot copy – that is, those which are on a nonsubjacent cycle. Only the interpretation of subjacency argued for in the analysis of Lushootseed presented above will have this effect.[14]

5. CONCLUSIONS

In the preceding sections I have argued that Lushootseed and Thompson Shuswap differ in certain important ways, and that these differences can be accounted for in a unified fashion by assuming that in Lushootseed the diminutive morpheme is a prefix, while in the Interior Salish languages itself an infix. The differing forms of doubly reduplicated words were argued to

[13] It should also be noted that Kiparsky's convention on bracketing erasure, along with a convention preventing reduplication across two brackets, makes different predictions from the hypothesis that morphological rules may apply across no more than two bounding nodes. In a language in which both 'word' and 'stem' are bounding nodes, a word-level CVC prefix should be blocked from copying phonemic material from both a stem-level CV prefix and the stem to which the CV prefix is attached:

$[_{word} CVC[_{stem} CV[_{stem} X]]]$

The convention of erasing brackets at the end of each level would, however, destroy information about the internal structure of the stem (including stem-level affixes) before the word-level CVC prefix was added; thus the CV prefix could not be identified as a separate cycle for the purposes of copying and association of phonemic material with the CVC prefix. I know of no cases which test the predictions of these alternative hypotheses.

[14] The one case I have seen of apparent violations of subjacency in doubly reduplicated forms is a case in which disyllabic reduplication in Tagalog reduplicates a CV reduplication prefix and the next syllable of the base (Duncan 1982). As Duncan points out, however, the analysis of disyllabic reduplication is extremely problematic, and the structure of these doubly reduplicated forms is by no means clear.

few from these differences in word structure, and the principle of adjacency, interpreted to prohibit the copying of phonemic melodies across cyclic nodes, was argued to be a universal principle constraining the operation of morphological rules. The larger conclusion suggested by this analysis is that the morphological and the syntactic components of the grammar are not so disparate as they might appear to be at first glance; we can see the same principles operating on the level of the word and the level of the sentence.

The analysis presented above involves certain assumptions which deserve further discussion. In particular, it was assumed that infixing is the attachment of a morpheme to a phonological constituent rather than to a morphological constituent; in terms of the infix discussed above, this means that the diminutive in the Interior Salish languages is subcategorized to occur before a stressed syllable rather than before a stem, as in Lushootseed. The infix is, at least in surface structure, integrated into the tree structure of the word; instead, it is attached in a linear fashion to some element in the phonological representation, and certain operations – the copying of the phonemic melody of a stem, in this case – can take place independently on phonological and on the morphological tiers. This assumption raises the question of at what level and in what way infixes are related to the other morphemes of a word. A treatment of this question is beyond the scope of this paper; I will note here only that this problem is the same one faced in describing the morphological structure of languages, such as Semitic languages, which make extensive use of nonconcatenative systems of morphology (McCarthy 1981). An analysis of the relationship between the phonological structure and the morphological structure of Salish infixal words should generalize to other, more consistently nonconcatenative languages.

REFERENCES

..., Margaret: 1978, Morphological Investigations, unpublished Ph.D. dissertation, University of Connecticut.
..., Sarah: 1982, 'Shuswap Internal Reduplication,' unpublished paper, University of British Columbia.
...son, Barry, ed.: 1977, Northwest Coast Texts, IJAL American Texts Series volume 2, number ..., University of Chicago Press, Chicago.
Chomsky, Noam: 1973, 'Conditions on Transformations,' in Stephen Anderson and Paul Kiparsky (eds.), A Festschrift for Morris Halle, Holt Rinehart and Winston, New York.
...rachmann, Gaberell: 1969, Twana Phonology, Ohio State Working Papers in Linguistics 5, Columbus.
Duncan, Jill Carrier: 1982, 'Some Problems with Prosodic Accounts of Reduplication,' unpublished ms, Rutgers University.
..., Daniel: 1982, 'Palauan Reduplication,' unpublished paper, University of Massachusetts.
...son, I.: 1973, Shuswap Grammatical Studies, University of Hawaii Working Papers in Linguistics 5, 5.

Haeberlin, Herman K.: 1918, 'Types of Reduplication in the Salish Dialects,' *IJAL* 1, 239–25...

Hess, Thomas: 1966, 'Snohomish Chameleon Morphology,' *IJAL* 32, 350–356.

——: 1976, *Dictionary of Puget Salish*, University of Washington Press, Seattle.

——: and Vi Hilbert (taqʷšəblu):1976, *Lushootseed* 1 & 2 Daybreak Star Press, United Indians of All Tribes Foundation, Seattle.

Jacobson, William: 1979, 'Noun and Verb in Nootkan,' in Barbara Efrat (ed.), *Conference... Northwestern Languages*, Heritage Record No. 4, British Columbia Provincial Museum, Victoria.

Jorgensen, J.: 1969, *Salish Language and Culture*, Indiana University Press, Bloomington.

Kiparsky, Paul: 1982, 'Lexical Morphology and Phonology,' unpublished paper, MIT.

Kuipers, Aert: 1967, *The Squamish Language*, Mouton, The Hague.

——: 1974, *The Shuswap Language*, Mouton, The Hague.

Lieber, Rochelle: 1980, *On the Organization of the Lexicon*, Unpublished Ph.D. dissertation, MIT.

Marantz, Alec: 1982, 'Re Reduplication,' *Linguistic Inquiry* 13, 435–482.

McCarthy, John: 1981, 'A Prosodic Theory of Nonconcatenative Morphology,' *Linguistic Inquiry* 12, 373–418.

Moravcsik, Edith: 1978, 'Reduplicative Constructions,' in Joseph Greenberg (ed.), *Universals of Human Language III*, Stanford University Press, Stanford.

Mohanan, K.: 1982, *Lexical Phonology*, unpublished Ph.D. dissertation, MIT.

Newman, Stanley: 1967, 'Bella Coola Reduplication,' *IJAL* 37, 34–38.

Pesetsky, David: 1979, 'Russian Morphology and Lexical Theory,' unpublished paper, MIT.

Pratt, G.: 1878, *A Grammar and Dictionary of the Samoan Language*, ed. by S. J. Whitmee, Trübner & Co. London.

Reichard, Gladys: 1959, 'A Comparison of Five Salish Languages: V,' *IJAL* 25, 239–253.

Sapir, Edward: 1915, *Noun Reduplication in Comox, a Salish Language of Vancouver Island*, Anthropological Series no. 6, Canada Department of Mines, Ottawa.

Selkirk, Elisabeth: 1982, *The Syntax of Words*, Linguistic Inquiry Monograph Series, MIT Press, Cambridge.

Siegel, Dorothy: 1977, 'The Adjacency Condition and the Theory of Morphology,' *Proceedings of the Northeast Linguistics Society Conference VIII*, Amherst.

Snyder, W. A.: 1968, *Southern Puget Sound Salish: Phonology and Morphology*, Sacramento Anthropological Society Paper 8, Sacramento.

Suttles, Wayne: 1980, 'Fragments Relevant to Some Questions about Aspect, from a Manuscript on the Musqueam Dialect of Halkomelem,' distributed at the West Coast Conference on Salish Languages.

Thompson, Lawrence C. and M. Terry Thompson: 1981, 'Affective Derivatives in Thompson River Salish,' *University of Hawaii Working Papers in Linguistics* 13, 119–127.

Topping, D.: 1973, *Chamorro Reference Grammar*, University Press of Hawaii, Honolulu.

Twaddell, Colin: 1950, *The Snoqualmie-Duwamish Dialects of Puget Sound Coast Salish*, University of Washington Press, Seattle.

Wilbur, Ronnie Bring: 1973, *The Phonology of Reduplication*, distributed by the Indiana University Linguistics Club, Bloomington.

Williams, Edwin: 1981, 'On the Notions "Lexically Related" and "Head of a Word",' *Linguistic Inquiry* 12, 245–273.

Program in Linguistics
State University of New York
Stony Brook, NY 11794
U.S.A.

THE ROOT CV-TEMPLATE AS A PROPERTY OF THE AFFIX:

EVIDENCE FROM YAWELMANI*

0. INTRODUCTION

The problem addressed here is the relation between underlying and surface representations of verbs in Yawelmani.* I will show that with certain suffixes in Yawelmani the form of a given verb is not necessarily identical to the canonical form which that verb exhibits with the majority of affixes in the language.

In general, regular verbs conform to one of the six CV-skeleta given in (1), where the parenthesized C-slot surfaces with triconsonantal roots and does not surface with biconsonantal roots.

(1)   a. CVC(C)   b. CVVC(C)   c. CVCVV(C)

Certain affixes, however, have the property of supplying a particular CV-skeleton for the root, which supersedes the patterns in (1). Thus, regardless of the form of the lexical entries, roots will surface with the pattern supplied by the suffix. For example, luk'l 'bury' surfaces with the (1a) CVCC pattern with the majority of affixes ('CLASS 1 AFFIXES') but assumes the (1c) form CVCVVC, i.e. luk'ʔul- (→ luk'ʔool- by regular processes) when followed by the affix -wsiil (→ uwsool by regular processes) 'reflexive/reciprocal adjunctive' a 'CLASS 2 AFFIX'). In fact, any root takes the (1c) template when -wsiil is affixed. With other class 2 affixes, roots are provided with other templates. Thus a root with the (1c) form CVCVVC before class 1 affixes e.g. huluus-sit' (→ hufos- by regular processes), surfaces as CVCC (1a), i.e. huls- (→ hul's- by regular processes) preceding another class 2 affix-(ʔ)iixoo 'durative'. Again, any root assumes the (1a) template when concatenated with -(ʔ)iixoo. This is tabulated in (2).[1]

[1] I follow Newman (1944) in representing unaspirated voiceless stops and affricates with the symbols generally reserved for the voiced counterparts, e.g. 'b' means a voiceless unaspirated p, 'd' is a voiceless unaspirated t, etc. The symbols normally reserved for voiceless stops and affricates are used here for the voiceless aspirated counterparts, e.g. 'p' means p^t, 't' means t^t, etc. C, (e.g.: k', l', t') as opposed to k, l, t respectively, is a glottalized consonant; C̟, (e.g.: t vs. t̟, s vs. s̟) is an alveolar (as opposed to a dental).