STEM EXTENSIONS IN HAISLA Emmon Bach The University of Massachusetts, Amherst

O. INTRODUCTION.* A word in Haisla consists of an initial element which is either a root or an extended root, followed usually by one or more derivational suffixes, and closed off perhaps by inflectional elements or enclitics. In addition there are a few elements that may be considered proclitics (Lincoln and Rath, 1986), which I will ignore here. Using conventional terminology, we may call the roots or extended roots "stems," and the operations or processes which account for the various possible shapes of the stem "stem extensions." Here are several examples¹:

bek°elu'semi 'character, way of acting'
 beg°a'nem 'person'
 bek°'e's 'sasquatch, monkey, man of the woods'

4. bi'beg°anem 'people'

5. baa'k * uala 'talk together' (LR)

These words are all built on the root \checkmark bek°- (LR: \checkmark bk°-). The first three examples illustrate what we may call "end effects": softening ("voicing") and hardening (glottalization) of the final consonant of the stem, while examples (4) and (5) illustrate typical stem extensions: reduplication and internal change of the root. Our focus here will be on the latter type of modification or alternation.

The stem alternations are of interest for several reasons, of which I will be concerned here mainly with two: (1) the light that they might throw on the question of the proper phonological representations of roots and other expressions of Haisla; (2) the implications that they have for the general question of possible representations and operations in human language. The present paper should be considered as a report on preliminary investigations which will, I hope, ultimately contribute to a better understanding of these two topics.

Lincoln and Rath (1986) have provided an analysis of Haisla (primarily the Kitlope language, or Renaksialak'ala, see fn. 1) which we may call the "vowelless" analysis. I will lay out their analysis in more detail below, but for now suffice it to say that in that analysis there are no underlying constrasts of syllabicity; all -- actually not quite all, as we will see -surface vowels and other syllabic nuclei are either derived from the set of sonorants or by epenthesis of schwa-like elements. The stem extensions offer crucial evidence about the phonology of the language.

There has been considerable discussion in the last ten years about the nature of phonological representations and the possible operations or rules that are required for the proper treatment of reduplication and similar types of morphological variation. The variations that we find in Haisla and other Wakashan languages provide a rich field for investigating such questions.

My concern here is the formal side of the system of stem extensions. But first a word about the conditions of their use. In the system of the internal word grammar of Haisla, the stem extensions play a role that is somewhat similar to the role of cases in the external or phrase grammar of many languages. They are sometimes required by the addition of particular derivational suffixes or processes. Sometimes they occur independently as in the plural forms that are found for many words. Finally many words just exist as extensions of one or another kind; for example, the word geges 'eye' is historically an

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expanded form of a root $\sqrt{g}es$ -, but this root occurs only in this word and words derived from it (like $\overline{g}e\overline{g}esgen'u'$ (LR) 'have eye trouble'). It is possible to discern certain commonalities of meaning for some of the reduplicated forms: plurality, iterativity and the like. 2

1. STEM EXTENSIONS: A SURVEY. Here is a sketch of the main types of stem extensions that occur in Haisla. For each type I give an example of the extension in more or less surface form followed by the putative shape of the root and, for later reference, the representation of the root in the Lincoln/Rath system in parentheses.

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In this pattern, the complete root is repeated. (In the tag example, the / x / comes about by a regular rule of Spirantization.)

Type 2: ci'x̄°cex̄°a √cix°- (√cyx°-) eat crabapples crabapple, sour

Here the root is followed by a reduced form of the root: the two consonants of the root with a (predictable) schwa (e) vowel between them.

Type 3: c'ec'en' \$ c'en- (\$ (\$ \$

In this type, the first consonant of the root is repeated followed by a schwa (e) vowel.

In this pattern, the first consonant is repeated, followed by / i /. The stress is still on the original root position. The stress is the only difference between this pattern and the next variant, where the stress is on the new (first) syllable²:

Type 4b: bi'beg°anem

/bek°- (/bk°-)

people human

This type is just like Type 4a, but the new vowel is / a / instead of / i /.

Here we see the initial consonant <u>and</u> the vowel of the root repeated, then the reduced form of the root (the two consonants of the root separated by the schwa vowel (e)).

Type 7: caa'seksala rces- ((<cs-)</pre> rush off in all directions swarm, move in a group

In this type, there is no reduplication but instead a modification of the internal shape of the root. The nature of the modification depends on the shape of the root. Note these further examples (and recall that the digraphs <ai au>

stand for open E and O respectively as explained in footnote 1).

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c'ai'piu cedar waxwing \checkmarkc'ip-/c'i'p- (\checkmarkc'yp-/c'y'p-)

gau'\bar{x}°eksala squander, scatter berries \checkmarkgu\bar{x}°- (\checkmarkgw\bar{x}°-)

k'au'\bar{x}°eksala run in all directions (LR) \checkmarkk'i\bar{x}°- (\checkmarkk'y\bar{x}°-)

c'a'maksala point aimlessly (LR) \checkmarkcem- (\checkmark'cm-)

daa'seksala play around diving (LR) \checkmarkdas- (\checkmarkdhs-)
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Type 8: ga'gak'a (LR) /gek- (/gk-)
try to get a wife woman
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In this type we see two /a/ vowels with a repetition of the first consonant.

Type 9: bu'sbeq°'a \string buq°- (\string bud, knob

Finally, we may have one or another of the previous types of reduplication together with the insertion of a new consonant (here "s") in the first syllable. This type should then be further subdivided according to the consonant and the basic type of expansion involved, but since the pattern is rather rare and not very productive, I won't assign special labels to all of the variants, but just lump them together into a sort of "waste-basket" or remainder class. The consonants that may be involved are /s lh x '/.

The last type is relatively sporadic and the same must be said for a few other types of root extension, such as those which intercalate vowels in roots, as in $k^{\circ}en'a'q$ 'mink' from a root $k^{\circ}enq-$ (compare for Kwakw'ala Boas (1947): pp. 220, 222-223).

Sometimes these reduplications occur with changes in the first consonants. Common changes are: /y/ for /s/, /l/ for /th lh/:

sayagidemai' take a boat / car ride vsak- travel in a boat or vehicle thalaka'p' canoe race vthak- paddle lhalaga'lh cave vlhaq-

2. BASIC PHONOLOGY OF HAISLA. Vink [1980] and Lincoln and Rath (1986) have adopted a view of Haisla phonology which minimizes or eliminates the distinctive role of syllabicity at the most basic level of representation. I will limit myself here to a discussion of the analysis used in LR, since it is both the more fully elaborated and also more readily available.³

The backbone of the LR analysis is the set of sonorants (resonants), which underlie not only the consonantal segments (represented by the consonant letters themselves) but also the vocalic segments as indicated here:

h w y l m n h' w' y' l' m' n' a u i l m n a' u' i' l' m' n'

A second part of the analysis is the introduction of schwa-like vowels by rules of epenthesis. There remains a residue of exceptional items of two kind: those schwas which occur in places where they cannot be accounted for by the epenthesis rules, which are represented by the use of the symbol e; and items which do not contain epenthetic vowels where the analysis would lead you to expect them, which are represented by use of a period, which can then be interpreted as a signal to suppress the usual epenthesis rules. Situations of reduplication introduce a further factor. Here the LR analysis makes of a colon as special boundary marker ":". It should be noted that there are a number of independent parts to this analysis, in particular, it is not necessary -- although it is certainly prettier -- to treat all of the sonorants listed above in the same way.

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The rules which introduce the distinction between vocalic and consonantal reflexes of the sonorants operate in broad outline as follows (for details see LR: pp. 4 - 8): (1) sonorants that are word initial or follow the reduplication boundary (:) are consonantal, (2) h that is not initial (including the : condition) is always vocalic, (3) a string of plain sonorants will alternate right to left to make the maximal string conforming to the pattern (V)V(CV)* up to the first obstruent or consonantal sonorant (as determined by (1)), (4) in marking off maximal strings of sonorants for (3), h is treated as the final element of each preceding string and simultaneously as the initial element of the next string of sonorants ((3) follows from this). (A few further provisions must be made for the glottalized sonorants.)

The epenthesis rules reflect the rather tight syllabic constraints on surface forms in Haisla. (i) Every word-initial syllable must begin with a consonant and with no more than one consonant. This constraint drives (1) and part of (3) in the preceding paragraph and also allows a rule of epenthesis to operate on words built on roots like LR's postulated voko- to give surface forms like those in our first examples (1 - 5) above. (ii) Medial clusters of obstruents are limited to ones in which the non-final obstruents are spirants (and as far as I know the maximal number of such spirants is two in items like a'lhxdem 'burying place' (and name of Gobeil Island at the head of Kildala Arm) or sequence of two with the first being an aspirated stop. (ii) motivates epenthesis to apply in items like example (3) above, in the LR representation bk°'s and also (optionally) in items like pa'p(e)lha (LR: p. 9), (note that this item is a reduplicated plural form for pa'lha 'freshet'). (There is a spirantization rule, alluded to above, that applies to syllable final aspirated (front and back) velars and the aspirated lateral affricate, and an s + s -> c rule as well as a couple of other rules that will effect the ultimate phonetics of medial clusters.)

Given these assumptions then we will have underlying representations like those given in parentheses after the examples of stem extensions in the preceding section, or examples of full words like these (taken from LR: p. 8, my brackets and retranscriptions on the right):

/k'yghwlmmhlh's/	[k'igaule	emmala's]	'material	for	caulking'
/łmhy/	[lhemai']	'to anch	or out'		
/cwyək°/	[cu'yək°]	drie	d'		

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How are we to interpret these underlying representations? Following much work of the last decade, I will assume that phonological representations may make use of the organization of segments into structures of various kinds, including in particular syllables.⁴ I will assume that representations of syllabic structure replace the use of a feature of syllabicity. We might then translate the assumptions of Lincoln and Rath into a theory which makes the claim that the underlying representations of roots and other morphemes in Haisla are simply not organized into syllables (and possibly other prosodic structures). Rules of the sort sketched above are then to be interpreted as rules for organizing the segmental material into syllables or structures that include syllables. What is special about the sonorants then would be the fact that they can be associated either with the nuclear or the peripheral part of the syllable structure. Representations of the sort given above as surface representations are to be thought of as informal and typographically more convenient shorthand for "official" representations like the following, as a first approximation (please keep the caveat of fn. 3 in mind):

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σσσσσσσσσσσ /\//\/\/\/\/\/\/\/ k'igaulemmalas lhemaicuyək°

The final consonants in the first and the last of these representations are deliberately left unattached. These representations are only partial. I assume that the syllables are organized into higher structures such as stress feet and phonological words, but I won't discuss this further elaboration here.

I will now argue for underlying representations that are organized into syllables. The argument goes as follows: I will first argue that the identification of initial / h / and interior / a / is incorrect. Then, I will try to show that the processes of stem extension surveyed in the last section need to make use of the kind of information encoded into syllabic structures like those shown here (or equivalent ones). Of course, this argument merely indicates that the organization into syllables must precede these particular rules and constitutes an argument for the underlying organization only in that this "ordering" would follow directly without stipulation from the assumption that the underlying representations already have such an organization. I will then show that there are significant generalizations and constraints on the actual form of the roots of Haisla that can be naturally understood on the basis of syllable structure and not otherwise.

A preliminary nonargument: The necessity of including the unpredictable schwas (a) in the LR analysis show that SOME vowels must be represented in underlying structures. I do not believe that this fact provides any strong argument against the "vowellees" analysis, although it goes against the spirit of such analyses in some weak sense. In some theories ("once a phoneme, always a phoneme"), it might count against the use of an epenthesis rule to introduce the overwhelming majority of surface schwas. This aspect of the LR analysis seems to me quite in keeping with the idea that predictable information should be eliminated from underlying representations. Specifying schwas in places where they "don't belong" should not make us specify them in the vast number of places where they are completely predictable. (On the other hand, the use of the juncture symbols (:) deserves discussion; see below.)

It will have been noted that the rules for vocalizing (syllabifying) the sonorants must make a special provision for /h/. The effect is that /h/ never occurs as a consonant interior to a word, except under conditions of reduplication, and hence there will never be any direct alternations of vocalic and consonantal variants of the sort that can be found for the other sonorants. It would be a spectacular confirmation of the analysis if we could find situations like this: an initial reduplication of the first consonant of a root beginning with /h/, say a hypothetical */hn- and a word like *hnm (cf. gm 'woman') with a plural form (say) *hhm[hanm] (cf. ggm 'women'). I have been unable to find any items like this, and anyway what we should get on the L & R analysis is *h:hnm with the reduplication boundary ":".⁵ What we do find in reduplications of items beginning with /h/ are usually alternate forms with /h/ (after : in LR) or with / ' / (h in the LR orthography), more usually the latter, as in these examples of items and their plural forms:

hem'sa (hm̀sa) hem''esa (hm̀'sa) 'eat' hen'ca (hǹca) hihen'ca / hi'en'ca (hi:hǹca / hi'ǹca) to sink

.

I conclude that the identification of /h/ and /a/ should be abandoned. Additional evidence for this conclusion will be found in the next section, when we consider root shapes of the language. If this view is right, we would then have a system with two underlying vowels (at least): / a a / (in Bach (1975) I reached a similar conclusion about Kwakw'ala).⁶

Let us now look at the operations of stem extension surveyed above. I will concentrate here on Type 3 and Type 6. In each case, we want to ask how to formulate the operation in question, given various assumptions about the shape of the arguments to the operation.

In Type 3, we have either a reduplication of the first consonant of the root, followed by epenthesis, or a prefixation of a light syllable of the form Ce (Ca) where C takes its value from the first consonant of the root, or possibly the prefixation of a light syllable with an empty simple nucleus, the ultimate schwa-type vowel arising simply as a default value, with these various options mainly determined by the particular theory we are using.

Suppose the initial consonant of the root is a spirant and assume that all (or almost all) schwas are introduced by epenthesis and that the operation in question here is simply a prefixation of a copy of the spirant. The result will now be a form in which the spirant can be followed by an obstruent with no epenthetic vowel. The most straightforward result would then be reduplicated stems like *[sesk-] from a root /sk-. In fact, there is a root like this with a number of reduplicated derivates, the root meaning something like 'sharp, to spear,' but the derived forms show epenthesis: sesek'a's 'Sitka spruce,' sesexba' 'sharp (on the end or point).' It is primarily examples like these which make the reduplication boundary ":" necessary in the LR analysis (and require an analogous use of "." in Vink [1980]): s:sk'as s:sxba.

It is possible to motivate the use of the reduplication boundary on independent grounds in the following way. Many linguists view reduplication as a kind of compounding. We know that in many languages it is necessary to treat compounds as something special (for example, in English stress rules). In a theory in which prosodic structures such as phonological words are countenanced (see e.g. Selkirk, 1982), a compound boundary like ":" may be considered just an informal notation for something that we have alread in our theory for free, so to speak: simply a word-internal occurrence of the edge of a word. In the context of Haisla, however, this consideration must be weighed against the fact that on this view reduplicated structures would constitute the only kind of compounding in the language.

Now consider the reduplication of Type 6, which prefixes a copy of the first CV or first two segments of the root to a reduced form of the root, with a schwa (or nothing) replacing the middle element (what is or will be the nucleus). There are of course various operations which will have this result, the formulation just given is intended purely as a neutral description of the result of some such operation. (This type is common as a way of forming plural forms, more below.) Here are some examples of plurals (followed by the simple form of the word and the root):

ba'bek°ela ba'k°ela /bak°- gather and preserve meat etc. LR bi'beka bi'ka /bik- transfer fire

My argument here is that it is really a syllable structure (or CV structure) that is being reduplicated, rather than just a sequence of two segments, for if it were the latter we would expect plural forms with repetitions of arbitrary

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pairs of first two segments. So, for example, from a root consisting of two or more obstruents we would expect plural forms consisting of a repetitition of these first two obstruents as plurals. This is admittedly a rather weak argument from negative evidence, especially since (as we will see) there are practically no roots consisting of three or more obstruents. But there are plenty with two (on the schwa-less analysis) and there is nothing inherently impossible about getting reduplications of the form that would arise from a putative operation of this sort (see Types 1 and 2 above), and as far as I know no plurals of this shape occur (cf. also for Kwakw'ala parallels, the section headed PLURAL in Boas (1947: pp. 246-251). In Section 4 below, we will look at a particular theory about reduplications which will nullify this argument as it stands and lead us to look for further evidence.

3. ROOT SHAPES IN HAISLA. As I noted above, everything I have said so far would go through -- if it goes through -- simply as arguments that the syllabic structure (or vocalization rules) should apply before the rules that produce the extended stems. But there are facts about the canonical root shapes of Haisla that seem to me to point toward the idea that syllabic structure plays a role at the deepest level. The central fact about roots in Haisla (and other North Wakashan languages) is that the overwhelming number of such roots have the form CVC, where I interpret V to stand for a syllabic nucleus and to include the reflexes of the sonorants (this is a very Boasian view of the structure of the roots). Here are some statistics about root shapes (these figures are approximate, but accurate within ten or so for the largest numbers and proportionately for the smaller numbers, the chief factor of indeterminacy being questions about whether to identify various roots of the same form or not):

- 5 monosegmental roots/stems
- 474 bisegemental roots/stems of which cv-roots: 31 (443 "cvc")
- 804 trisegmental roots of which "hollow" cvc-roots: 796
- 56 quadrisegmental roots/stems of which cvcv: 46
- 8 five-segment roots/stems
- 2 six-segment roots/stems

1349 TOTAL

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These designations should be self-explanatory for the most part. The breakdown is based on the the representation in LR. The designation root/stem is to accomodate the fact that the root list includes some basic stems that have not been assigned to any root (since these are mostly longer items, removing them would tend to make my point a little bit stronger, but the number of such items is very small in any case). If we put together the items in the second and the third row that end up on surface as conforming to the CVC pattern we have a total of 1239 out of 1349 or about 86%. I think that this fact is very suggestive, at least, that syllable structure plays a strong role at the most basic level of Haisla phonology.

There is one more fact about roots in Haisla that bears on our views about the basic representations. There are hardly any roots in the language which show (on the LR type of representations) sequences of identical segments, with the notable exception of roots of the form /hh. This fact seems to support the decision not to identify the phones [h] and [a] as instantiations of /h/.

As a matter of fact there are hardly any bisegmental (in the LR sense) roots that have identical obstruents, and the few that do exist are probably onomatopoeic. This might be used as an argument for fundamental representations with no vowels (no schwas), since this result would follow from an Obligatory Contour Principle of some kind (cf. McCarthy's work on biliteral roots in Arabic (1979, 8

1981). However, given the considerations of the next section, this fact can be accomodated in another kind of representation.

4. REPRESENTATIONS AND OPERATIONS. The system of stem extensions in Haisla leads to a number of general questions. Trying to answer them throws further light back on Haisla itself. The two main questions, which are interdependent, are these:

i) What is the structure of a lexical representation in Haisla? ii) What are the operations that are needed to specify the stem extensions? e.

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It is tempting to consider splitting up the roots and stems of Haisla into consonantal and vocalic components in the manner of the celebrated Semitic system (see McCarthy, 1979, 1981). On this view, an item like the root of the family of words that mean 'see, look' would consist of three parts (using a LISPy notation)⁸:

 $duq^{\circ}-((CVC) (d q^{\circ}) (u))$

Here the first component is a pattern or skeleton, and the consonantal and vocalic components are attached to the pattern by general conventions or stipulations (parameters) that might be language-particular (e.g. directionality of association). By varying the components, especially the skeleton (including prespecifications of individual pieces) we can produce some of the various stem-shapes outlined above. For example, the plural form of the stem (Type 6 above), would have one of the following two shapes, depending on our treatment of schwa (as a full vowel in its own right in the first representation, as a product of epenthesis in the second):

 $du'deq^{\circ} - ((CVCVC) (d q^{\circ}) (u a))$ or $((CVCC) (d q^{\circ}) (u))$

(For such representations to work, we need to assume that the consonants are attached or filled in from right to left, unlike Semitic. I don't know if anyone has suggested the use of such three-part representations directly for the treatment of reduplicative patterns. Most discussions that I am aware of seem to assume that the rules and representations for reduplications involve fully linearized representations. For recent discussion see McCarthy and Prince, ms.; for discussion from a general point of view more in line with my general assumptions, see Hocksema and Janda, 1988; both of these sources contain references to recent literature.)

Notice that this view solves a certain difficulty that arises on a more "homogeneous" view of the forms as fully linearized sequences of consonants and vowels or nuclei. Given an item like duq*-, what might be the actual formal operation needed to derive dudeq°-? Given a linearized string like duq*, must we take the first and third segments to get the end of the derived form (it doesn't help much to have prosodic structures here either)? (I realize there are other views about reduplication for which this would not be a problem either.) In any case, the use of the three part representations for Semitic commits us to the view that such representations are available for any language, or a considerably stronger view that they are required for every language.

This view makes the considerations of the last section somewhat problematical. After all, a three part representation like that just sketched has no syllabic structure except in the first element or pattern part (on the assumption, not

spelled out here, that the CV representation should be replaced with one which is more satisfying from the point of view of prosodic theories, see below and McCarthy and Prince (ms.). To deal with this worry adequately will demand something more than the suggestive remarks of the last section, that is, a real theory about how considerations of syllabic or other prosodic structure can enter into the construction of descriptively adequate grammars.

Haisla differs from Semitic in that the vocalic components do not seem to have the life of their own that they enjoy in Semitic. Moreover, the roots that carry their own (non-schwa) vowels (or non-initial sonorants) always seem to manifest some reflex of those segments, as we shall see; in this respect these roots seem to be more like the "hollow" roots of Semitic.

Given such a theory it is easy to handle a (rather rare) type of stem extension that I mentioned but did not include in the survey of Section 1 above. Taking the example cited there we might have:

ROOT ('?')	DERIVATE ('mink')	
/k°nq- ((CVC) (k° n q) ())	k°na'q ((CCVC) (k° n q) (a))	or
(CVC) (k° n q) ())	k°ena'q ((CVCVC) (k°n q) (ə a))	

The first of these representations is more in line with the LR analysis, the second follows a more "vowel-full" analysis. In either case it is necessary to force the sonorants like / n / to play double roles as nuclei (or components of nuclei) or as consonantal elements. That's just a fact about the language and it is the central insight about the role of the sonorants that is embodied in the LR analysis.

Another derivate from the same root is the Haisla word for 'frog, toad':

 $k^{\circ i | k^{\circ} naq}$ ((CVCCVC) ($k^{\circ} n q$) (i a)) or $k^{\circ i | k^{\circ} enaq}$ ((CVCVCVC) ($k^{\circ} n q$) (i \ni a))

These examples raise an interesting question: what is the proper representation for a derived or extended stem? It seems that a number of derived words in the language are built on the root that underlies a given stem rather than on the word or stem itself. There is a very productive pattern for forming words that mean 'to hunt or go after X' where X stands for the name of an animal or plant. An example is k°a'k°enq'a meaning 'hunt or trap mink' (the q' is a regular "end effect" for the suffix -!a that triggers the reduplicative pattern, the notation -! to mark suffixes that trigger glottalization is borrowed from Boas). It is straightforward to derive this form from a representation that retains the root intact (either in the fashion under discussion here or in some other way), not so nice to have to deform the surface form of the derived word.

So where are we with respect to the initial questions about the basic phonology of Haisla? It seems to me that adopting the tripartite structures changes the questions somewhat. Recall that I "translated" the LR analysis into one in which syllabic structure was not represented at all in underlying forms. In the tripartite structures, the syllabic structure is represented not in the consonantal or vocalic tiers, but in the patterns or templates -- either implicitly in the CV representations, or explicitly in a version of the theory in which these patterns are spelled out as actual prosodic structures. From this point of view, then, the question whether the underlying representations of the phonology lexical items includes specifications of syllabicity reduces to the questions whether the prosodic patterns should be included in these basic representations or not. Whatever the fate of the idea of forming partial reduplications on the skeletal part of a tripartite (or bipartite) structure, reduplications of Types 1 and 2 (complete reduplication of the stem, with or without reduction of the second component) require a different treatment.

A somewhat more orthodox approach to reduplication is to assume that the reduplicated element is simply an affix of some kind, but one which contains just a minimal amount of specification. What this content is and how it is structured if at all is what distinguishes various theories that are currently under discussion.⁹ The content of the reduplicated material is then copied in from the root or stem to which the affix is affixed. (It is not clear to me whether the current general theories of such operations exclude elaborations that would amount to a variant of the ideas we have just been entertaining.)

In the theory of prosodic morphology under investigation by McCarthy and Prince (ms.) the targets for the reduplications must be prosodic units as provided by the general theory of such structures and further specified by choices and constraints of the language at hand. One of the main arguments for a theory of this sort is that material can be drawn from the source item which is not structured prosodically in the way it ends up in the reduplication. The theory says: "Make a structure of such and such a form!"

If we adopt this kind of a framework, one of the arguments I gave in Section 2 will no longer go through. In discussing Type 6 reduplications (like du'deq°ela), I used the fact that this reduplication never takes two obstruents for reduplication as evidence for having syllabic structure in the input to the operation. In a theory which requires the target structures to be prosodic constituents, this result would follow no matter what the input, as far as I can see. And the fact that such double segment reduplications do not occur would just take its place alongside the many other "negative facts" marshalled by McCarthy and Prince to support their theory.

It is not easy to see how to get the second, reduced part of extended stems of this type. Such reductions also can be found in other types, notably Type 2 in which the whole root is followed by a reduced form of the root ($ci^{\dagger}\bar{x}^{\circ}ce\bar{x}^{\circ}$). We could construct a whole target form consisting of two syllables of the specified types, but this would more or less reduce to the approach of skeleton filling considered above, with the only difference that we would not (necessarily) be assuming separate vocalic and consonantal tiers. An oddity of such an approach is that we would be prefixing a target to something that would disappear entirely.

Adopting the McCarthy and Prince approach would settle a question about the other type of reduplication discussed in Section 2 (Type 3: c'ec'en). Since the McCarthy/Prince theory does not allow the use of single segments as targets the type in question here would have to be derived by using a minimal or "core" syllable (g_c) as the target.

There are two more points that throw some light both on the question about the basic phonology of Haisla and on the general questions of this section.

The first is a continuation of the discussion of the formation of plurals in the pattern of Type 6. I believe that a case can be made for this type being the default or "regular" mode of plural formation for roots of the type of $\sqrt{duq^{\circ}}$, that is, roots that have (or will have) a full vowel in a shape of the form CVC. The default pattern for roots of the form CV (including CR) and CC (or CeC)

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where the second C is an obstruent is CiX (where X is CV or CR or CC). Here are some examples:

bibe $\bar{x}a^{i}$ $\checkmark be \bar{x} (\checkmark b \bar{x}-)$ make laces didena' $\checkmark den (\checkmark dn-)$ pull sth. didia' $\land di (\checkmark dy-)$ wipe bibua' $\land bu (\checkmark bw-)$ escape pipaa' $\checkmark pa (\checkmark ph-)$ lay boards

The operative principle here seems to be a distinction in syllable weight, although this fact is somewhat obscured by the transcriptions here. A more consistent transcription for the first four items would be either with / i u / resolved into /ey ew/ (which is phonetically more accurate) or in a more basic transcription (according to the LR and Vink analysis):

/bybxa' dydna' dydya' bybwa'/

We know that the distinction between light and heavy syllables plays a role in the stress system of Kwakwala and probably in Haisla as well (Boas, 1947; Bach, 1975). So here is a point where prosodic structure seems to play a role in allomorphy. (The remaining type of root, with an internal sonorant, such as <c'elk-(<c'lk-)'make baskets' shows both types of plurals, except that the first type retains the sonorant in the second syllable: c'ic'el'kila as well as c'el'c'elkila.) Note also that here /a/ seems to line up right along the other sonorants, contra my conclusions above, but there is also a parallelism with schwa, if indeed there is a schwa in these examples.

The second and final point has to do with the interesting stem extensions of Type 7, which show no reduplication but rather a modification of the nuclear part of the root. I repeat the examples from above with examples for the remaining types of roots not illustrated above but all with the same suffix:

caa'seksala rush off in all directions /ces- (/cs-) daa'seksala play around diving /das- (/dhs-)

k'ai' \bar{x}° eksala run in all directions $\checkmark k'i\bar{x}^\circ - (\checkmark k'y\bar{x}^\circ -)$ $\bar{g}au'\bar{x}^\circ$ eksala scatter berries (LR) $\checkmark \bar{g}u\bar{x}^\circ - (\checkmark \bar{g}w\bar{x}^\circ -)$ k'au' \bar{x}° eksala run in all directions (LR) $\checkmark k'i\bar{x}^\circ - (\checkmark k'y\bar{x}^\circ -)$ c'a'maksala point aimlessly $\checkmark cem - (\checkmark c'cm -)$ $\bar{g}al'qeksala pick up, put down randomly (LR) <math>\checkmark \bar{g}elq - (\checkmark \bar{g}lq -)$

da'yaksala wipe randomly √di- (√dy-) ba'waksala flee in all directions (group) √bu- (√bw-)

Recall that the digraphs <ai au> stand for simple vowels open E and O. However, there is independent evidence for a coalescence of a + i and a + u to form these vowels. Thus, the common factor here is obviously the incorporation of / a / into the nucleus of the root. Notice the first two examples which show that roots with / a / and either nothing or schwa end up with the same shape: a long / a / (represented as a sequence). It seems to me that this fact speaks for an inclusion of a schwa vowel in the representation at least at the level where these stem extensions take place. One way to think about it is to suppose that the heavy nuclei of all but the last two examples consist of an / a / followed by a second component. In the case of the glides and other sonorants, if the syllable is closed they join that vowel in a complex nucleus. In the case of the schwa, perhaps it is just an empty (unspecified) vocalic slot which then soaks up the value of the incorporated / a /. You will notice that there is one type still missing from the

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above examples, that is the roots in simple / a / (/ h /). Perhaps characteristically, this phoneme displays its ambiguous status in two alternate forms:

5. NOT FINAL THOUGHTS. I have to admit that I am far from convinced as to the right way of looking at Haisla phonology. There are still a number of questions to be raised. For example, in an earlier paper about Kwakw'ala (Bach, 1975), I argued for an analysis in which the surface vowels /i u/ were reflexes of diphthongs formed with schwa, and I think that this is a reasonable option to consider for Haisla as well. But it raises its own questions about the status of schwa and the way in which epenthesis operates: if these surface vowels are analysed in this way, is the schwa component there from the start or does it arise by epenthesis? From the point of view of general theories, I hope to have shown that Haisla like other languages of its part of the world has much to contribute to our understanding of natural languages.

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Endnotes.

¹Examples solely from Lincoln and Rath (1986) are marked by LR, which will also abbreviate a reference to this work. All other examples unless specifically marked by this or other means are from my own notes. It should be noted that LR is based primarily on the language of Kitlope/Kemano, as indicated clearly by the authors, and that the name Haisla is something of a misnomer for this language, since Haisla (Xa'' isla) refers to a site and people that is located near the present town of Kitimat (the present village of Kitamaat being more or less on a site referred to as C'imau'c'a).

I use an orthography which is a compromise between the orthography of LR and the system currently being used in Haisla classes in the schools of Kitamaat Village and Kitimat, which is based on the work of Hein Vink (Vink, [1980]). The main things to note are: th, th', dh for lateral affricates, lh for voiceless 1 ($\frac{1}{2}$), e for schwa, C' for glottalized C, ai and au for open E and O respectively, \overline{g} , \overline{x} for back g and x. (and em, en, el for sometimes syllabic m, n, l), C° for labialized C. I have retranscribed all examples into this orthography, except where issues of analysis are reflected in the orthography, where context or explicit indication will make the matter clear (but I have retained a for unpredictable schwas in examples from Lincoln and Rath). There are easy mechanical mappings among these various orthographies.

²Readers familiar with Kwakw'ala should note that the stress or accent systems of the other North Wakashan languages differ both from each other and from Kwakw'ala (see Bach (1975) and Lincoln and Rath (1980). There are also minor differences in stress between Xenaksialak'ala and Haisla, but I have been unable to determine whether they are systematic or just due to differences between individual lexical pairs. This is not the place to discuss these stress systems in detail. It appears to me that Haisla has a system of accented and unaccented suffixes overlaid on a system perhaps of the same general sort as that posited for Kwakw'ala in Bach (1975).

³On p. 44, Lincoln and Rath raise the possibility of recognizing a phonemic opposition between vowels and resonants in Kitamaat Haisla. I should also point out that any attempt to reinterpret an analysis within a different set of assumptions about phonological theory, such as I am undertaking here, runs the risk of misrepresentation, so that it might be more appropriate to read my remarks here as a discussion of a generative analysis suggested by the analysis of the authors discussed.

⁴Although there are many precedents, both outside of and within the generative tradition, the main impulse to develop syllable theory within the last decade is Kahn (1976). There is now a wide variety of theories about syllabic and other lowerlevel prosodic organization, e.g. Levin (1985), Lowenstamm (1981). I intend my discussion here to be somewhat neutral on the many issues still being debated in this area. More on these matters in the next section.

⁵Incidentally, if I have understood the LR vocalization rules correctly, they predict that an item which consists solely of a sonorant, should be consonantal, but this contradicts the statement elsewhere that the sonorants are always vocalic in final position. In this case we have a position which is simultaneously initial and final. The only instance of this situation that I know of is the reduced form of the item la in its use as a "preposition" marking a locational phrase or an object, and this form is always syllabic. There are several examples of reduplications which are candidates for this situation, if we interpret reduplication as compounding, such as the following:

''e'nix eyebrows Vink [1980] 'a'ai'nik LR 'wax open sea, ocean Vink [1980] 'a'uak' LR

į.....

-1945-Sauth

10110-0

-014 Pix-

ş. .

These discrepancies in transcription are not surprising given that in position after initial / ' h / there is an overlap of the allophones of /a a'/ and the schwa (epenthetic or anaptyctic for LR and Vink, see the discussion in the introduction of LR).

⁶ There is much more to be said about reduplicative patterns with roots in initial sonorants, especially the glides (including /h ' /). It is likely that the complex situation reflects diachronic identities of the sort posited in the LR analysis, which have become obscured by analogical formations, compare Boas (1947), p. 221 for Kwakw'ala, and on the possible diachronic sources for the glottalized sonorants Sapir (1938).

⁷I am not concerned with questions of practical orthography here. However, it is worth noting that a better choice for a "compound-boundary" might be a hyphen, both because it is so used in other languages, and because the use of ":" preempts (or compromises) the use of that sign for punctuation purposes. Practical orthographies need punctuation.

⁸I am sensitive to the criticisms of the CV representations in McCarthy and Prince. ms., as well as to the current debates about proper phonological representations. More discussion below, and see also fn. 9.

⁹The recent discussions seem to have started with Marantz (1982), who in turn took off from McCarthy's work on Semitic (McCarthy, 1979). Lowenstamm (1981) and Levin (1985) represent different approaches which share the assumption that there is a lowest level of minimally specified units. more or less: "segment" or "timing slot." See also Clements and Keyser (1981).

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