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Obligatory Branching Revisited

Michael Hammond
University of Wisconsin-Madison

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Michael Hammond

University of Wisconsin--Milwaukee

The theory of stress developed in Hayes (1981) allows for a relatively succinct account of the stress patterns of languages like Eastern Cheremis or Komi, but only a rather ad hoc treatment of cases like Khalkha Mongolian or Aguacatec Mayan. Let us compare the analyses of Eastern Cheremis and Khalkha to see how this is so.

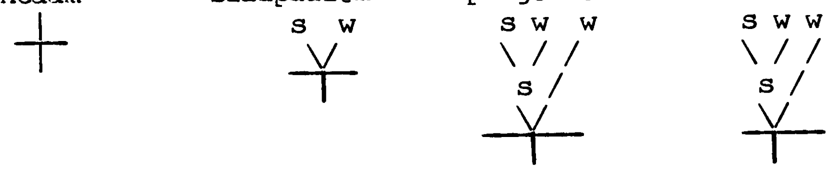
Stress in Eastern Cheremis falls on the last full vowel of a word. If the word contains no full vowels, then stress falls on the initial syllable. Some examples from Hayes (1981) are given below.

(1)	siincaam	'I sit'	puug@lm@	'cone'
	slaapaaz@m	'his hat'(acc.)	t@l@z@n	'moon'(gen.)

To account for this kind of system, Hayes employs the parameter of <u>quantity-sensitivity</u>. Basically, this creates three options, depending on what kind of quantity-sensitivity is used. First, foot construction can be quantity-<u>in</u>sensitive. This means that there are no restrictions on what syllables may be dominated directly by recessive nodes (usually w-nodes). Second, foot construction can be quantity-sensitive on the [+syllabic] projection. This means that recessive nodes may not dominate long vowels (those elements that branch on the [+syl] projection). Third, foot construction can be quantity-sensitive on the rime projection. This means that recessive nodes may not dominate heavy syllables (those elements that are branching on the rime projection).

Eastern Cheremis exhibits quantity-sensitivity on the [+syl] projection. One left-dominant foot is built on the right margin. A right-dominant word tree is built on the output of foot construction. Notice that it apparently has no empirical consequences.

(2) siincaam slaapaaz@m puug@lm@ t@l@z@n



This system can be compared to that of Khalkha Mongolian. In Khalkha, the first long vowel in the span gets stressed. If there are no long vowels in the word, the initial[1] syllable gets stressed. Representative data are given below.

(3) bosguul	'fugitive'	garaasaa	'from one's own hand'
bariaad	'after holding'	ali	'which'
xoy@rdugaar	'second'	xot@lb@r@	'leadership'

To get stress on the first long vowel in the span, one could build a right-dominant quantity-sensitive foot on the left margin. This gets the right results in examples like the following.

(4) garaasaa bariaad

However, this leads us to expect final stress in the event there is no long vowel in the span. This is incorrect.

(5) *ali *xot@lb@r@

The correct stress patterns for the items in (5) could be generated if one built a left-dominant quantity-sensitive foot on the right margin.

```
          /                      /
(6)      ali                 xot@lb@r@
         s w                  s w  w w
         \ /                  \ /  / /
                               s  / /
                               \ / /
                                s /
                                \/
```

This, however, predicts stress on the last of a sequence of long vowels, which is also incorrect.

```
                        /
(7)            *garaasaa
                      |
                     ___
```

Thus Hayes' notion of quantity-sensitivity entails something of a paradox for languages like Khalkha. To remedy this, Hayes adopts Halle & Vergnaud's (1978) Obligatory-Branching parameter (henceforth 'OB'). Like quantity-sensitivity, this actually entails three possibilities. First, one may place no branching requirement on the dominant node (usually the s-node). Second, foot construction may be OB on the [+syl] projection. This means that dominant nodes in feet must dominate long vowels, and recessive nodes may not dominate long vowels. Third, foot construction may be OB on the rime projection. This means that dominant nodes in feet must dominate heavy syllables, and recessive nodes may not dominate heavy syllables.

In Khalkha, a right-dominant OB foot is built on the left margin. This produces examples like the following.

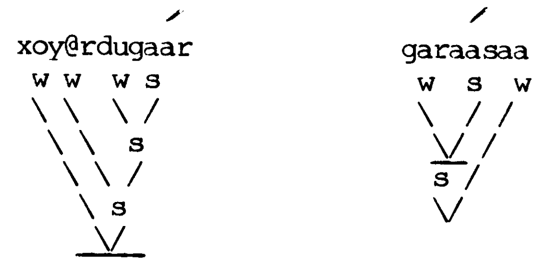
```
                    /              /
(8)        xoy@rdugaar        garaasaa
            w w  w  s          w   s
            \ \  \/            \   /
             \ \  s             \/
              \ \/             _____
               \ s
                \/
              _____
```

If the word contains no long vowel, then no foot is built, since no footing results in the dominant node dominating a long vowel.

```
          /               /
(9)     *ali           *ali
         |              w s
         |              \ /
        ___             ___
```

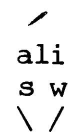
The output of foot construction is incorporated into a left-dominant word tree. In cases like (8), this has no consequences.

(10)



But in cases like (9) the effect of word tree construction is essential. If there is no foot, word tree construction takes syllables as terminals.

(11)



This stress assignment procedure thus accounts for stress systems like Khalkha Mongolian, as opposed to Eastern Cheremis. However, it does so at a cost. The OB parameter does not seem to combine with other parameters of foot construction as freely as the quantity-sensitivity parameter. For example, all apparent instances of OB involve a single foot built on the margin. There are no attested cases of iterative construction of OB feet.[2] Examples of iterative construction of quantity-sensitive feet are not hard to find. For example, Hayes describes and analyzes Koya as follows.

(12) Koya

> "Primary stress falls on the initial syllable, secondary stress on closed syllables or syllables with a long vowel.
>
> Analysis: feet are unbounded, assigned on the rime projection. Both feet and word trees must be left-dominant."(p.58)

In this paper, I will argue that there is an alternative to OB that will account for systems like Khalkha, but also play a more central role in the system. The basic idea is that OB be modified so that if a foot is OB, then its dominant node must dominate a branching element, but its recessive node may also dominate branching elements. I will show that this allows us to deal straightforwardly with languages like Lenakel. Additionally, it allows us to deal with an old problem case: Cairene Arabic. It also allows a simple account of languages like Khalkha Mongolian and Aguacatec Mayan. Finally, I show that it seems to account straightforwardly for Klamath.

In what follows I will assume the version of metrical theory developed in Hammond (1984). There the central thesis is that the set of operations manipulating metrical structures can be profitably constrained to pruning operations. Moreover, pruning can only occur in certain universally prescribed situations. The interested reader can see that work for the theory of "metrical transformations" that emerges. For my purposes here, an interesting consequence of that theory is that the notion of metrical structure is modified in several crucial respects.

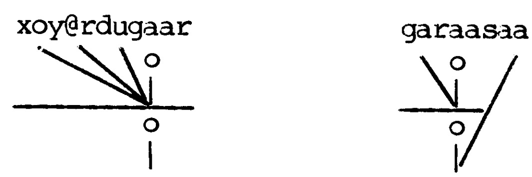
First, the grid is eliminated. That is, no rule of the phonology need refer to the grid, nor is there any rule that performs a structural change in terms of the grid. Hence, the grid is eliminated as a spurious complication of the theory.

Second, "strong weak" labelling is forgone in favor of DTE-labelling. Every metrical constituent has one and only one Designated Terminal Element -- its DTE. This is the node of the constituent that is not dominated by any w-nodes. Hammond (1984) determines that while phonological rules refer to DTEs and non DTEs, they do not refer directly to notions like s-node and w-node. Hence, one is replaced for the other.

Lastly, following Leben (1982), constituent-internal binary branching is done away with. Constituents are n-nary branching.

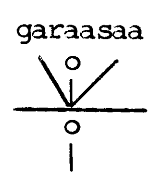
This results in trees like those below for examples we have seen up to now. Compare (13) with (10).

(13)



In addition, I will assume that unfooted elements are adjoined as weak sisters prior to word tree construction. Thus a word like garaasaa actually receives the representation in (14) rather than that in (13).

(14)

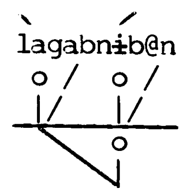


The basic stress pattern of Lenakel will be analyzed next. First, I consider the stress patterns of nouns; next the stress patterns of verbs, which are somewhat more complex. Lastly, I consider the analysis of "long vowels". These require a revision of the theory as it stands. In (15) is exemplified the stress pattern of Lenakel nouns.[3]

(15) nám	'fish'	kÓlEy	'sweet potato'
kavÉvaw	'hat'	làgabnɨ́b@n	'(in the) morning'
kayÈlawÉlaw	'kind of dance'	lÈdubplùgalÚk^h	'lungs'(loc.)

To get this stress pattern, left-dominant feet are built leftward and incorporated in a right-dominant word tree. For example:

(16)

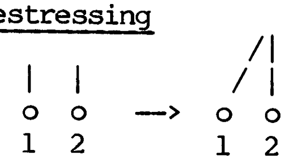


This accounts directly for the examples with an even number of syllables, but gives the wrong results for examples with an odd number of syllables.

(17)

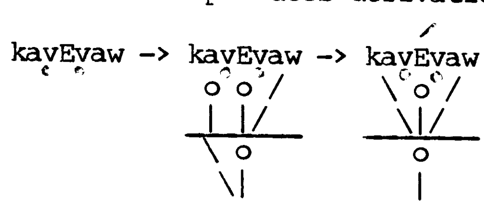
To account for cases like this in other languages, Hayes (1981) assumes that there is a class of rules that may remove stress assigned by the stress assignment procedure. Therefore I assume a rule with the structural change given in (18).

(18) Destressing



Hammond (1984) actually eliminates such rules. However, the details of that proposal would take us far afield, so I adopt (18) as a descriptive expedient. This produces derivations like (19)

(19)

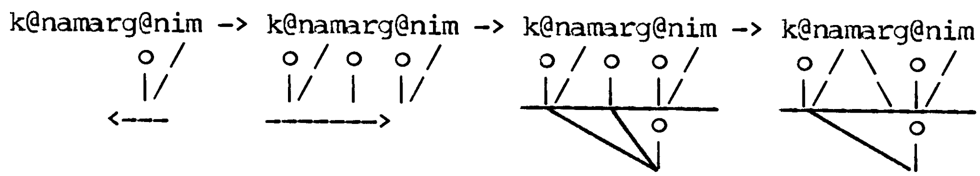


Compare the verbal stress pattern.

(20)	rOs	'he took it'
	arOw	'to follow'
	yagyag@n	'we eat it'
	nɨmaliwOk^h	'you walked'
	k@namarg@nɨm	'they have been pinching it'
	t^{y}agamarOlgEygEy	'we will be liking it'
	tɨnagamyasɨŋ@vɨn	'you will be copying it'
	nad^{y}agamEdwadamnimþn	'why am I about to be shaking'

To account for these, I propose that foot construction is bidirectional for verbs. First, one foot is built on the right margin. Then feet are built from the left margin. As with nouns, all feet are left-dominant. The output of foot construction is incorporated into a right-dominant word tree and undergoes Destressing (18).

(21)



Notice how bidirectional foot construction creates the context for destressing on the antepenult in all cases with an odd number of syllables.

Lenakel exhibits tense and lax vowels in near complementary distribution. High vowels are tense in open syllables and lax in closed ones. Mid vowels are lax before consonants and tense otherwise. The examples in (22) show that nonlow vowels are tense before other vowels and word-finally. (23) shows that nonlow vowels are lax in closed syllables. (24) shows that high vowels are tense in open syllables; and (25) shows that mid vowels are lax when followed by a consonant -- even in an open syllable.

(22)	píak^h	'my brother'	kád^{y}i	'coconut pudding'
	núak^h	'my shoulder'	álu	'to dig'
	mèaméa	'ant'	nɨ́de	'taro'
	kàmadóa	'kind of taro'	amágo	'to dance (of women)'
(23)	Ilmáŋa	'Eromanga Isl.'	kÍŋ	'kind of worm'
	kÚmgUm	'to be stiff'	sÚk^h	'spear'
	Élmas	'to frighten'	kát^{h}El	'we'
	vɨlÓvlo	'kind of bird'	tɨgÓmgOm	'branches'
(24)	ígo	'to be twisted'	avílɨŋ	'to be thin'
	úlɨk^h	'to be hard and dry'	núdo	'kind of arrow'
(25)	Éna	'to suck in one's stomach'	k@mÉlu	'kind of basket'
	Ód^{y}i	'to separate'	kÓlaw	'kind of tree'

To account for these, I adopt the inventory in (26) and the rule in (27).

(26)

```
        i       u

        e   @   o

                a
```

(27)

```
        Laxing             R
                          / \
                         /  <\>
         V --> [-tns] / ___   C
        <+hi>
```

This rule laxes high vowels in closed syllables, and mid vowels e and o preconsonantally.

However, there are additional cases of tense vowels not derivable by the rule given. Moreover, these vowels apparently attract stress.

(28)	asís	'to swell up'	amnúm	'to drink'
	abgén	'to be jealous'	yElmów	'salt water eel'

Lax vowels with no tense counterpart may also attract stress.

```
         /                          /
(29)  k@bas  'axe'             alm@l   'to be insane'
```

Let us adopt Hayes' diacritic [+H]. Hayes (1981), in an analysis of Aklan, observes that certain morphemes contain vowels that must be treated as "honorarily heavy" for purposes of stress assignment. Such vowels are marked with the feature [+H].

Halle & Vergnaud (ms.) develop this idea further. They propose that vowels be divided into two types -- accented and unaccented -- and they represent accented vowels with underlining. There are two types of accented vowels, lexically accented and accented by rule. Lexically accented vowels are Hayes' [+H] vowels. Vowels accented by rule are basically different kinds of heavy syllables in a quantity-sensitive system. That is, all footing is accent-sensitive, and languages differ in whether 1) no accents are assigned; 2) accents are assigned to long vowels; or 3) accents are assigned to heavy syllables. These three possibilities correspond to the three possibilities for quantity-sensitivity.[4]

Therefore we assume that certain morphemes in Lenakel are lexically marked [+H], that is, their final vowels are accented. This has the consequence of forcing degenerate feet in accented morphemes.

```
          v                               / v        /
(30) /od'i/         'to separate'       [od'i]   [asis]
                                         o /       o
     /asis/         'to swell up'        |/        |
```

How then do we account for the fact that these vowels do not undergo rule (27)? The most straightforward method is to revise (27) as follows.

```
(31)            Laxing  (revised)      R
                                      / \
                                     /  <\>
                V  --> [-tns] / ___      C
              |<+hi>|
              | -H  |
```

Now Laxing will only affect [-H] vowels. In fact, this is just what one would expect if the diacritic solution is correct. More than one rule should be able to refer to the diacritic.

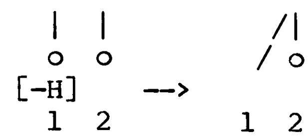
This proposal predicts that [+H] vowels would interrupt the alternating patterns observed above. Though [+H] vowels only occur in morpheme-final position, this is not hard to demonstrate.

(32) /nɨ-gi-nil-ar/ nɨginilar 'their hearts'

/nɨ-man-si-nil-ar/ nɨmansinilar 'their derrieres'

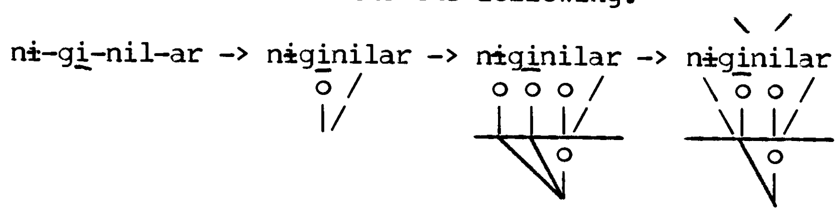
To account for the forms above, one need only assume that Destressing does not apply to [+H] vowels. This revision is given below.

(33) Destressing

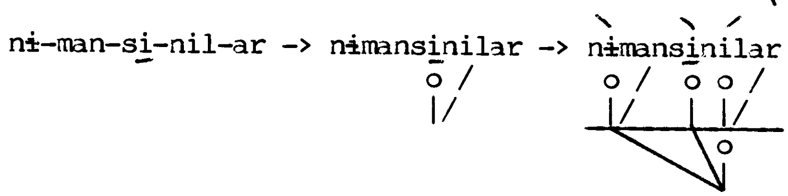


This results in derivations like the following.

(34)



(35)



The facts get more complicated though when one considers adjacent [+H] vowels. The following forms all contain final [+H] vowels. This accounts for their final stresses.

(36) /r-ɨs-g@n-an/ rɨsg@nan 'he didn't eat it'

/r-ɨm-ed^{y}aw/ rɨmEd^{y}aw 'he arrived'

/r-ɨm-asow-yav/ rɨmasOwyav 'he went north'

However, when these morphemes are concatenated, the second [+H] vowel in the sequence is stressless.

(37) /r-ɨs-ed^{y}aw-an/ rɨsEd^{y}awan 'he didn't arrive'

/r-ɨm-ed^{y}aw-yav/ rɨmEd^{y}awyav 'he arrived in the north'

When three [+H] vowels are concatenated, only the second is unstressed.

(38) /r-ɨs-ed^{Y}aw-yav-an/

rɨsEd^{Y}awyavan 'he didn't arrive in the north'

To account for this, I propose that binary feet are constructed left to right prior to normal stress assignment. They are left-dominant, heads must branch, and nonheads may branch. This means that heads must dominate [+H] vowels, and nonheads may dominate [+H] vowels. This converts the first examples in (37) and (38) into the following.

(39) rɨsEd^{Y}awan   rɨsEd^{Y}awyavan

The [+H] vowel footing rule will account for the stress patterns of words conntaining [+H] vowels. Notice that this rule iterates in the opposite direction of normal foot assignment. Also, when we consider the consequences of final [+H] vowels, we see that the [+H] rule is necessarily independent of normal footing since it feeds that rule. The procedure is outlined below.

(40) Stressing Verbs

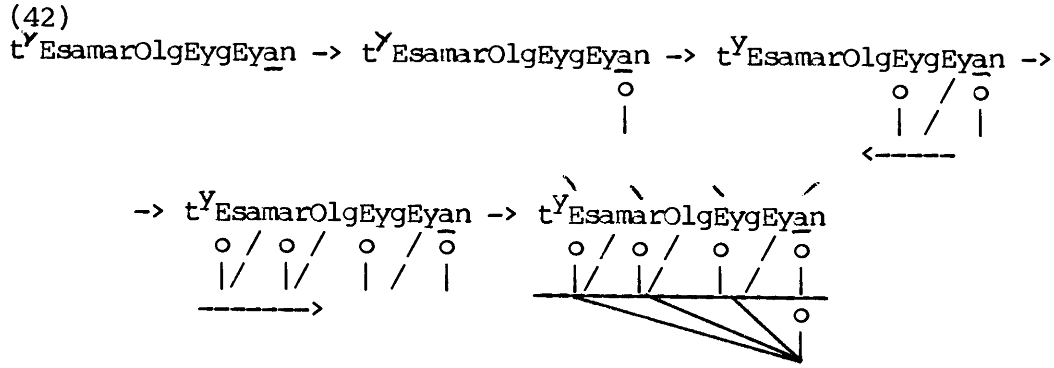
1. Build left-dominant binary (revised) OB feet (feet where dominant nodes must branch, and recessive nodes may branch).
2. Build one left-dominant binary foot on the right.
3. Build left-dominant binary feet from the left.
4. Build a right-dominant word tree.

Consider the following verbs.

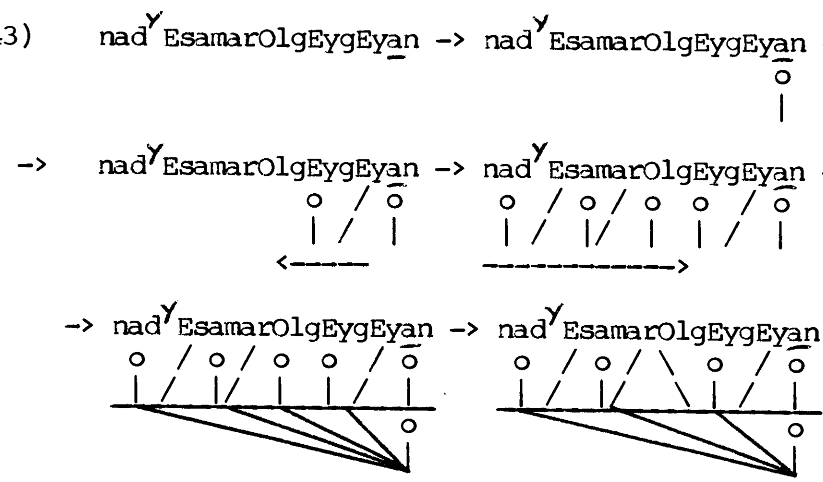
(41) am	'to see'
rɨmam	'he saw it'
rɨmamam	'he was looking at it'
tɨnagamwam	'you two will see it'
tɨnagamwabgen	'you two will be jealous'
nad^{Y}agamayb@gen	'we are going to be jealous'
t^{Y}EsamarOlgEygEyan	'we won't like it'
nad^{Y}EsamarOlgEygEyan	'we aren't about to be liking it'

Final stresses are built from the right by [+H] stressing before normal stress assignment. In (42) and (43) are derivations of the seven- and eight-syllabled cases.

(42)



(43)



An analysis of [+H] vowels in Lenakel thus requires an apparent revision of OB-feet. If this same foot type can be used to account for languages like Khalkha, then we will have countered the objection that OB does not combine freely with other parameters of Hayes' system. This demonstration will be undertaken below. Let us now turn to another example of revised OB-feet.

Following are some Cairene examples drawn from McCarthy (1979).

(44)	buxala	'misers'	amalti	'you did'
	muxtalifa	'different'	martaba	'mattress'
	sajaratahumaa	'their tree'	sakakiin	'knives'

McCarthy describes the stress pattern as follows.

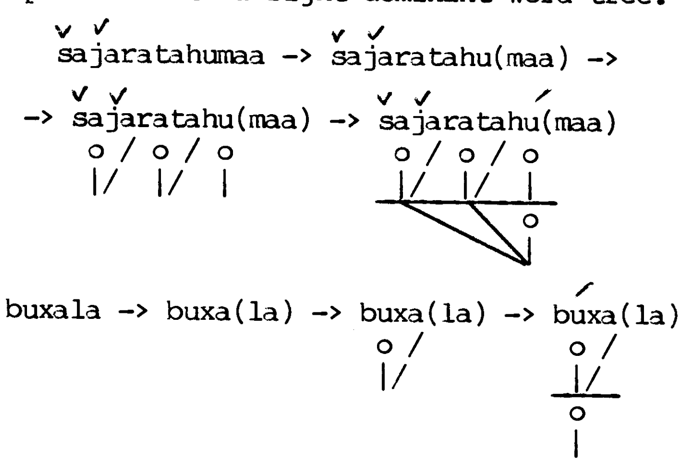
(45) a. Stress a superheavy ultima,
b. otherwise, stress a heavy penult,
c. otherwise, stress the penult or antepenult, whichever is separated by an even number of syllables from the rightmost nonfinal heavy syllable, or, if there is no nonfinal heavy syllable, from the left boundary of the word.

Let us assume, following McCarthy, that superheavy final syllables are actually composed of two rimes, a heavy rime followed by a light one. If that is so, then clauses (45a) and (45b) are reduced to one, because stressing a superheavy final reduces to stressing a heavy penult.

Clause (45c) makes it clear that binary feet must be constructed from the left. If that is so, then some means of preventing final stress when the ultima is not superheavy must be found. Hayes (1981) proposes that final rimes be rendered extrametrical, and we will adopt this proposal.

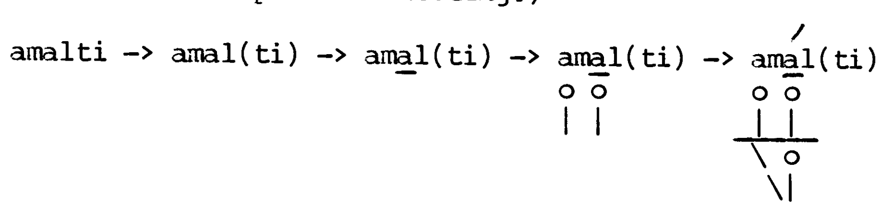
However, now there is a problem. In words with no heavy syllables, one apparently builds left-dominant feet rightward. These are incorporated into a right-dominant word tree.

(46)



However, some words with heavy syllables will not work this way. (Recall that in a quantity-sensitive system like Cairene heavy syllables are accented prior to footing.)

(47)



```
martaba -> marta(ba) ->
                                   /
-> marta(ba) -> marta(ba) -> *marta(ba)
    -             -             -
                  o  /          o  /
                  | /           | /
                  |/          ------
                                 o
                                 |

muxtalifa -> muxtali(fa) ->
                                            /
-> muxtali(fa) -> muxtali(fa) -> *muxtali(fa)
    -               -               -
                    o  / o          o  / o
                    | /  |          | /  |
                                   --------
                                         o
                                         |
```

Some, though not all, of the heavy syllable cases will work with right-dominant feet.

```
                                                       /
(48)    amalti -> amal(ti) -> amal(ti) -> amal(ti) -> amal(ti)
                     -           -           -
                               \ o          \ o
                                \|           \|
                                           -----
                                              o
                                              |

        martaba -> marta(ba) ->
                                           /
        -> marta(ba) -> marta(ba) -> marta(ba)
            -             -            -
                          o  o          o  o
                          |  |          |  |
                                      -------
                                        \ o
                                         \|

        muxtalifa -> muxtali(fa) ->
                                                   /
        -> muxtali(fa) -> muxtali(fa) -> *muxtali(fa)
            -               -               -
                            o  \ o          o  \ o
                            |   \|          |   \|
                                           --------
                                             \   o
                                               \ |
```

Right-dominant feet will also not work with all the light syllable cases.

```
                                                  /
(49)    buxala -> buxa(la) -> buxa(la) -> *buxa(la)
                                \ o        \ o
                                 \|       __\|__
                                              o
                                              |
```

Notice that the situation here is very similar to the Khalkha paradox above. In both cases, some examples are handled with left-dominant feet and others with right-dominant feet. This suggests that OB is the way to go here. In light of the Lenakel revision, we propose the following analysis.

(50)
- a. Mark the final rime extrametrical
- b. Build right-dominant feet from the left where the heads must branch and nonheads may branch.
- c. Build left-dominant binary feet left to right.
- d. Build a right-dominant word tree.

This provides derivations as follows.

```
                                                              /
(51)    buxala -> buxa(la) -> N/A -> buxa(la) -> buxa(la)
                                       o /        o /
                                       |/        _|/_
                                                  o
                                                  |

                                                              /
        amalti -> amal(ti) -> amal(ti) -> N/A -> amal(ti)
                                \ o                \ o
                                 \|               __\|__
                                                     o
                                                     |

        muxtalifa -> muxtali(fa) ->
                                                       /
        -> muxtali(fa) -> muxtali(fa) -> muxtali(fa)
             o                o  o /         o  o /
             |                |  |/        __|__|/__
                                               \ o
                                                \|

        martaba -> marta(ba) ->
                                              /
        -> marta(ba) -> marta(ba) -> marta(ba)
             o              o  o        o  o
             |              |  |      __|__|__
                                         \ o
                                          \|
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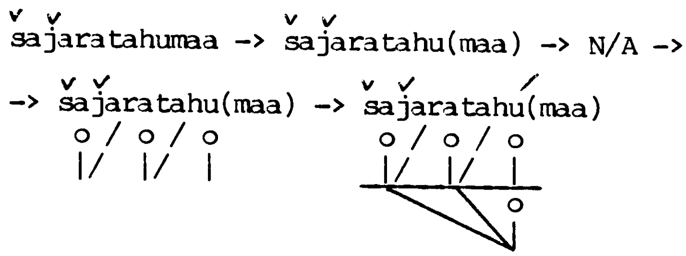
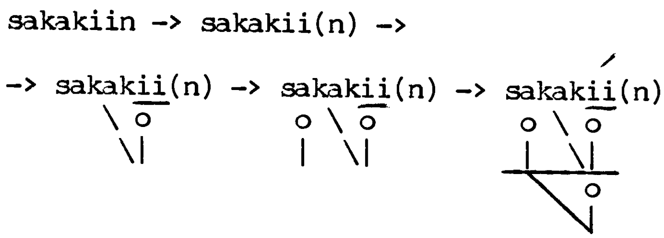




Notice that the revision of OB required for Lenakel works out just fine here.[5]

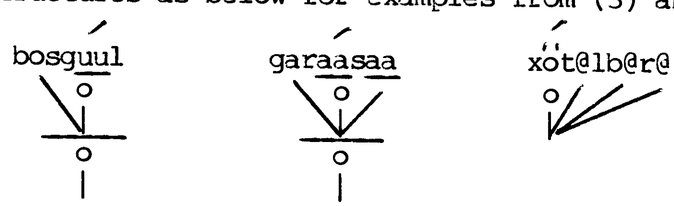
Let us return to Khalkha. The analysis of Lenakel above necessitated a revision of OB. The analysis of Cairene shows that this same foot type also works in other systems. If revised OB feet can work in Khalkha, then we will have established that OB feet are far more central to the system than was previously thought. An analysis incorporating OB feet is given as (52) below.

(52) a. Build one left-dominant unbounded foot where the head must branch and dependents may branch.

b. Build a left-dominant word tree.

This produces structures as below for examples from (3) above.

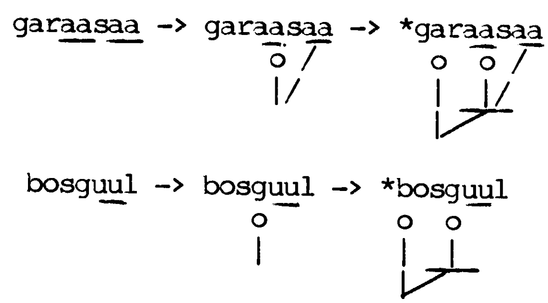
(53)



Notice that the word tree takes feet as terminals if a foot has been constructed, otherwise syllables.

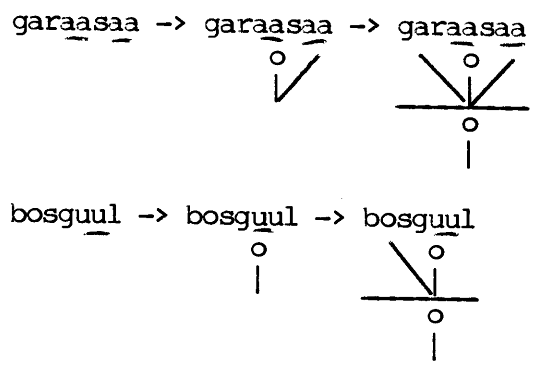
Considering forms like <u>garaasaa</u> more closely, we do not allow derivations like the following.

(54)



These representations simply do not make sense. This possibility is excluded by stray adjoining stressless syllables before word tree construction.

(55)



I have argued that metrical theory needs a revised Obligatory Branching parameter. Revised OB-feet allow recessive nodes to branch, but require that dominant nodes branch. Such a revision avoids the problem of there not being any iterative OB-feet. Just such feet were required in Lenakel. Moreover, the same kind of feet worked in Cairene Arabic and Khalkha Mongolian.

An important consequence of this result is that it undercuts one of Prince's (1983) principal arguments against trees in favor of a grid-only theory. Prince argues that OB is ad hoc to deal with cases like Khalkha Mongolian. The grid theory, since it apparently needs no ad hoc devices to deal with such cases, is then preferred.

A number of authors have argued against the grid-only theory,[6] but none have until now countered this argument of Prince's. We have shown that OB-feet not only account for languages like Khalkha, but also systems like Lenakel and Cairene. Prince must therefore account for the same systems to substantiate his argument.

The stress system of Klamath provides interesting support for the revision of OB suggested here.[7] The facts can be summarized as follows.

(56) a. The rightmost long vowel receives primary stress.
b. otherwise, stress a closed penult;
c. otherwise, stress the antepenult if there is one;
d. otherwise, stress the penult.

Data exemplifying each case are provided below.

(57) "long vowel"

naqá:qbli	'puts a flat object on one's lap'
s?o:dí:la	'puts a tray of food under'
čatá:wipga	'is sitting in the sun'

(58) "closed penult"

gatbámbli	'returns home'
qmaqkánga	'looks around for'
taktákli	'red'

(59) "antepenult"

cáwiga	'is crazy'
?áp?ota	'promises'

(60) "penult"

bóčo	'wild celery'
káni	'who?'
glégatk	'dead?'

To account for the cases in (57), one would surely need quantity-sensitive or OB feet of the unbounded type. If the feet were quantity-sensitive, then we would expect initial stress just in case the word contained no long vowels. The data in (58) show that this is incorrect. When there are no long vowels, stress falls on a heavy penult. Therefore, I conclude that the feet constructed are not quantity-sensitive, but OB.

(61) Preliminary Analysis

a. Accent all long vowels.
b. Build a right-dominant (revised) OB foot.

This accounts directly for the words in (57).

(62) s?o:di:la   cata:wipga

However, (61) leaves all other cases -- (58), (59), and (60) -- unstressed.

Before revising (61) to account for these, let us consider secondary stress assignment. Levin (in prep.) cites the following examples.

(63)	gaba:tambli	'goes back to shore'
	gawi:napgàbli	'is going among again'

According to Barker (1964), secondary stress falls on the penult when "either the penult or the final syllable are closed and high pitch and stress occur upon a long vowel preceeding the penult"(p.36).

Levin (personal communication) observes that examples of light penults receiving secondary stress because of a heavy ultima are extremely rare. Given this paucity of relevant examples, I assume the generalization is:

(64) Secondary stress falls on a closed penult if main stress occurs on the left.

This assumption is consistent with 1) the examples cited in Barker (1964) and Levin (in preparation), 2) the fact that light penults followed by heavy ultimas that might be stressed by Barker's description are extremely rare, and 3) the way heavy syllables normally attract stress via quantity-sensitivity or OB. We will see below that this simplifying assumption does not alter the relevance of Klamath for revised OB.

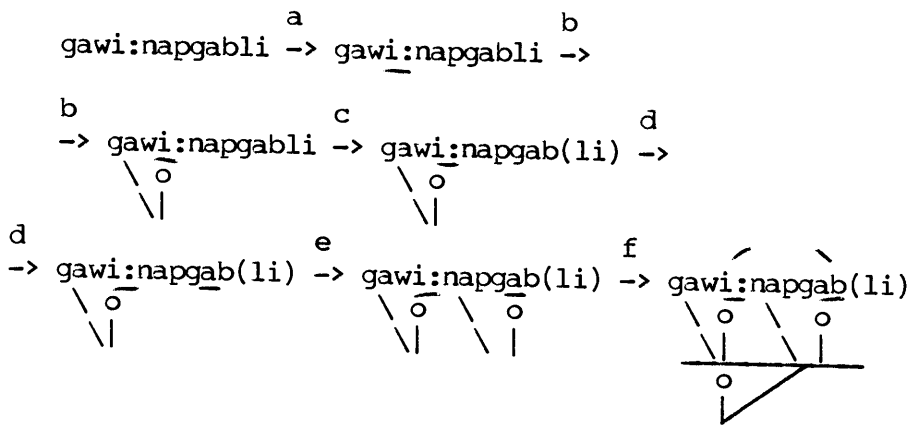
(63) is therefore revised as follows.

(65) Revised Analysis

a. Accent all long vowels.
b. Build a right-dominant (revised) OB foot.
c. Make the final syllable extrametrical.
d. Accent the last metrical syllable if it is closed.
e. Build a right-dominant (revised) OB foot. (i.e., repeat step 'b' above)
f. Build a binary left-dominant superfoot (colon).

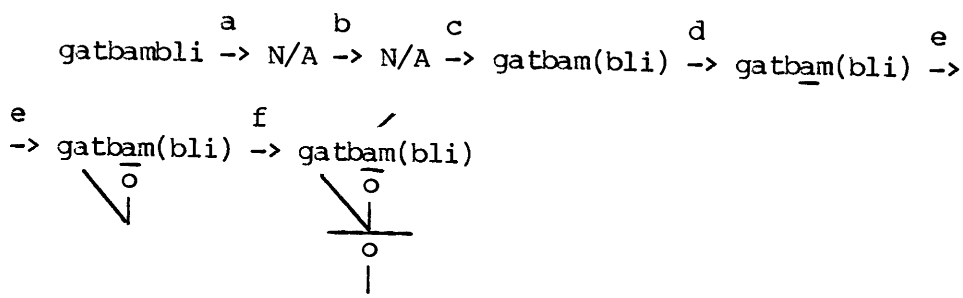
This analysis accounts straightforwardly for the secondary stress facts available. For example:

(66)

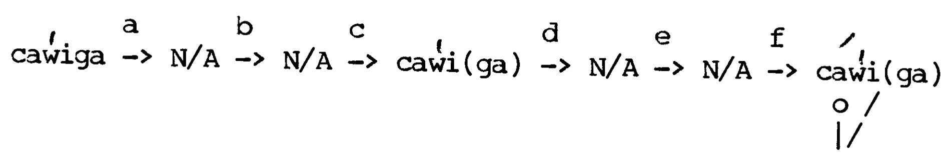


This analysis also accounts directly for the examples in (58), (59) and (60). Following are derivations of the first example in each set.

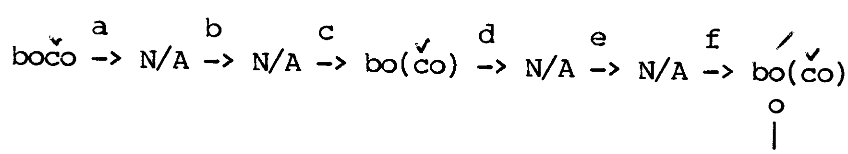
(67)



(68)



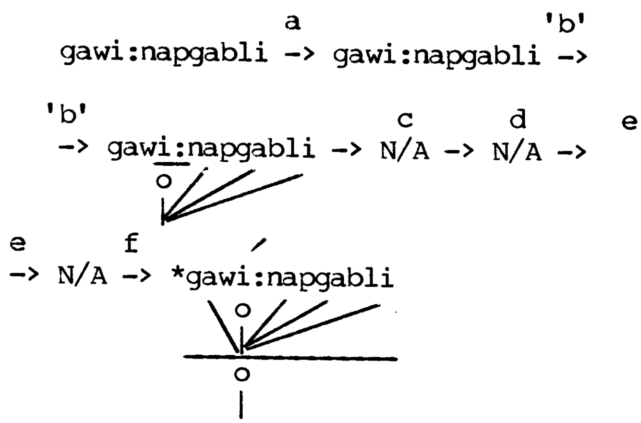
(69)



Notice that each of the default stress assignment clauses also plays a role in long vowel stressing. Thus the heavy penult clause assigns secondary stress in the event a long vowel is present, but primary otherwise. The left-dominant superfoot ranks the long vowel and the heavy penult, but in the event neither are present, places antepenult stress.

The relevance of Klamath for the revision of OB proposed should be clear. Revised OB feet in Klamath are right-dominant. This permits secondary stress to occur to the right of the long vowel foot. Using unrevised OB feet, there would be no way to place secondary stress since such feet would have to be left-dominant, leaving no room to the right for the secondary stress foot, e.g.:

(70)



FOOTNOTES

*This paper owes much to discussion with D. Archangeli, D. Fritz, M. Gordon, B. Hayes, N. Hedberg, S. Miguel, G. Sanders, and especially J. Levin. All errors of data or analysis are the author's sole responsibility.

[1]See Street (1963) for the data, and Hayes (1981) for the analysis sketched here.

[2]But see Pesetsky (1979), where iterative OB feet are proposed to deal with Menomini. Thanks to B. Hayes for drawing my attention to this reference.

[3]In Lynch (1974) the facts to be presented here are given a generative SPE-type analysis. Some of these facts are also discussed in Hammond (forthcoming). In these data, [y] is a high central glide; capital letters indicate lax vowels; [@] is schwa; and labialized labials have been transcribed with macrons. Certain allophonic processes are suppressed. For details on the allophony, see Lynch (1974). Some of the forms to be presented exhibit considerable internal structure. A morpheme-by-morpheme gloss has not been provided since this structure is irrelevant to stress assignment.

[4]Actually, their system of accent assignment is rather vague, and it is not clear how many possibilities it allows. This issue is dealt with in Hammond (in prep.).

[5] Regular OB would also work here.

[6] See Halle & Vergnaud (ms.), Hammond (1984), and Rappaport (1984).

[7] I draw my data here from Levin (in prep.) and Barker (1964). Thanks to J. Levin for drawing my attention to the relevance of Klamath for revised OB. See Levin (in prep.) for an alternative analysis.

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