Metrical Structure in Abaza

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The metrical theory of Halle and Vergnaud (1987; henceforth HV) allows for the utilization of lexically specified foot structure. This has taken the form of both lexically specified boundaries of prosodic constituents and lexically specified heads of such constituents. Such boundaries have been used to account for prestressing phenomena, for example by Idsardi (1991), since a right constituent boundary at the left edge of a form will place stress on preceding structure.

The question arises, then, if any language requires the use of both these features—lexically specified prosodic constituent boundaries and lexically specified prosodic constituent heads. The claim of this paper is that Abaza is just such a language.

Abaza exhibits two phenomena in its stress system which cannot be accounted for by a straightforward metrical analysis. There are two types of stress patterns for nominal and verbal roots, which are lexically marked. One type marks a root syllable for stress, whereas the other type marks the syllable immediately preceding the root as stressed. (These latter will be referred to as "prestressing").

The second phenomenon which does not fit neatly into a metrical account is an apparent hierarchy of roots and affixes that determines the placement of stress. In this hierarchy, "strong" prefixes rank highest, followed by "strong" roots, "strong" suffixes, "intermediate" prefixes and "weak" roots. A straightforward metrical phonology without lexical specification of prosodic structure cannot easily account for such a hierarchy.

It will be shown that both of these independent phenomena can be accounted for by allowing foot boundaries to be listed in the lexicon in addition to heads of feet. Strong roots and affixes will be listed with the head of a prosodic constituent (foot). Intermediate prefixes and weak roots will be listed with the boundary of a prosodic constituent. Weak affixes will have no lexically specified prosodic structure. Only intermediate prefixes and weak roots exhibit prestressing, and this will be shown to be a direct result of their lexically specified foot structure.

1.1 Background

Abaza is a Northwest Caucasian (NWC) language of the Abaza-Abkhaz family. Like other NWC languages, Abaza has a disproportionate number of phonemic consonants (60) in relation to its underlying vowel inventory (2). The underlying inventory of Abaza consists of the following:

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1 Thanks to Armin Mester, Junko Ito and Bill Ladusaw for comments and suggestions at various stages in the development of this paper. A special thanks to Armin Mester for the many hours he put into reading various drafts of this paper, for the numerous fruitful discussions, and especially for his encouragement throughout the project. Thanks also to the Summer Institute of Linguistics, under whose auspices much of the field research for this paper was carried out.

2 The terms "strong," "intermediate" and "weak" are meant as descriptions of the relative strength only.
At least partially because of the size of the consonant inventory, there is little phonetic variation among the consonants. The vowels, on the other hand, vary considerably in their phonetic quality, depending primarily on the surrounding consonants. This is largely predictable, and will not be addressed in this paper.

2 The Abaza Stress System

Each word in Abaza has a single stressed syllable, and the location of stress is contrastive. Numerous minimal pairs can be shown, having the same segmental content, but with a different placement of stress. Stress therefore cannot be assigned by simply applying a predetermined metrical algorithm to unspecified material. Rather, the metrical algorithm is crucially dependent on, and fed by, lexically prespecified structure. It is the formal notion of such lexical prespecification that is at issue here.

Each root (both nominal and verbal) has its own inherent stress assignment, which must be listed in the lexicon. There are two general patterns a root may exhibit. The first option is for stress to fall on a particular root syllable. For a given root, stress may fall on any syllable, regardless of its position in the word (ultimate, initial, penultimate, etc.). This can be seen in the following sets of roots:

(1) ajˈkʷa
   'pants'
   'ajgʷa
   'friend'

(2) ˈalaḥa
   'grow'
   aˈlapa⁴
   'braid'
   alaˈga
   'begin'

The second option is for stress to appear on the syllable immediately preceding the root. When there is no prefix to provide a syllable before the root, stress appears as late in the word as possible (i.e. on the last non-extrametrical syllable of the word in terms of the analysis presented below). This can be seen

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3 Word final devoicing of obstruents and some voicing assimilation in clusters are perhaps the only significant rules. The distinction between underlying voiced and voiceless segments is generally maintained, at least for stops and affricates, as voiceless segments are aspirated but devoiced ones are not.
4 Some of these verbs might not be single morphemes. Braid, at least, has a preverb, ala. Roots (nominal or verbal) of more than two syllables are rare.
in (3) and (4), where a prefixed form is given in (a), a form with an extrametrical suffix in (b), and a form having a non-extrametrical suffix with a vowel in (c). In the (a) cases, stress falls on the syllable before the root, and in the (b) and (c) cases, stress falls on the final syllable.

(3a) /a-skʷʃ/  
the-year  
[‘askʷʃ]  
(b) /skʷʃ-kʷa/  
year-a  
[skʷʃkʷa]  
(c) /skʷʃ-kʷa/  
year-PL  
[skʷʃkʷa]

(4) /a-bizʃə/  
the-language  
[‘abizʃə]  
(b) /bizʃə-kʷa/  
language-a  
[bizʃəkʷa]  
(c) /bizʃə-kʷa/  
language-PL  
[bizʃəkʷa]

2.1 Prestressing vs. Root-stressing Roots

The nominal roots la 'dog' and la 'eye' differ only with regard to stress assignment. In (5) the vowel a of the root la is stressed in every form. In the prefixed forms in (6), stress falls on the vowel of the prefix, si in (b) and (d). In (6a) and (6c), the unprefixed forms, stress falls on the final syllable (la and kʷa, respectively).

(5a) /la/  
[la]  
'dog'
(b) /s-la/  
[sla]  
'my dog'
(c) /la-kʷa/  
[lakʷa]  
'dogs'
(d) /s-la-kʷa/  
[slakʷa]  
'my dogs'

(6a) /la/  
[la]  
'eye'
(b) /s-la/  
[sla]  
'my eye'
(c) /la-kʷa/  
[lakʷa]  
'eyes'
(d) /s-la-kʷa/  
[slakʷa]  
'my eyes'

For prestressing roots of more than one syllable, the immediately preceding syllable is stressed, as in (7b). Stress falls on the final syllable of the root when there are no affixes (7a), and on the final (non-extrametrical) affix otherwise (7c):

(7a) /matʃʷ/  
[matʃʷi]  
'finger'
(b) /s-matʃʷ/  
['simatʃʷ]  
'my finger'
(c) /matʃʷ-kʷa/  
[matʃʷkʷa]  
'fingers'

The same pattern holds for verbs. The root žʰi 'cook' stresses the root vowel in all cases, while žʰi 'drink' stresses the syllable immediately before the root, as seen in (8) and (9). The form in (9b) shows that it

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5 Clitics, such as the adjunct marker -la, and true suffixes, such as the indefinite marker -k' and the predication markers -b and -d, do not participate in stress placement rules, that is, they cannot be stressed, even in the default case. Additionally, the suffixes do not have a following vowel in the usual environments. I take this to indicate their extrametricality. Extrametricality will not be discussed in detail in this paper.

6 In the Abaza verbal paradigm, prefixes include agreement markers (agreeing with all argument NPs), preverbs and locative markers. The suffixes include tense, aspect and mood markers. Negation occurs both prefixed and suffixed depending on the aspect and mood of the verb.
is not the initial syllable which is stressed in prestressing environments, but the syllable immediately before the root.

(8) /s-ʔʐ-ʔd/       [ʔzit]       'I cooked'

(9a) /s-ʔʐ-ʔd/       [siz't] ~ [sis't]       'I drank'
(b) /j-g-l-s-ʔʐ-wa-m/ [jiklsizwam]       'I didn't cook it'

2.2 Lexically Marked Edges of Constituents

It is necessary to specify some sort of foot structure in the lexicon in order to account for unpredictable stresses. Because of the need to capture the difference between roots which stress a root vowel and those that stress the syllable immediately before the root, we can employ a lexically specified edge of constituent, where the constituent is a foot.

Within the HV framework, lexically specified (and other "special") brackets have already been proposed (e.g. for Cairene Arabic and for Chugach in Halle 1990, for Turkish in Halle & Kenstowicz 1991, and for Interior Salishan languages in Idsardi 1991). Since this idea of contextual foot structure has received significant development in the HV theory, I will formulate my analysis within this framework.

Similar contextual foot structure has been proposed by Inkelas (1989). In her theory, affixes (may) subcategorize for both morphological and prosodic constituents of various levels (e.g. à and á, which roughly correspond to levels 1 and 2 of Lexical Phonology). Prestressing in Abaza would be treated within prosodic subcategorization theory by having a prestressing root or prefix prosodically subcategorize for a foot to its left. This is not significantly different from marking a foot boundary at the edge of the morpheme, as proposed here.7

Within the HV framework, heads of feet may also be contextually specified. This is done either by the lexicon, as in Chamorro, for example (see HV, p. 205), or determined by some other context, such as syllable structure, as in Koya, where vowels in closed or long syllables receive special marking (see HV, p. 14).

The HV theory utilizes a bracketed grid representation, as in (10). Asterisks are located above each syllable head. Constituents are marked in the line of asterisks by parentheses, and the heads of these constituents are marked on the next higher line by an additional row of asterisks. Constituent formation and head marking may be repeated (as specified in the algorithm for each language). Finally, an End Rule designates one head (asterisk) as most prominent, and this is expressed by a single asterisk on the highest line.

(10) * (* * *)
     (*) (*) (*)
O kefe nokee

7 Note, however, that there are lexically specified stresses (=feet) which pattern identically to these subcategorized feet (see below). The proposal given here accounts for this in a non-arbitrary way by allowing the lexical specification of edges of prosodic constituents anywhere in the morpheme. Prosodic subcategorization as proposed by Inkelas does not allow for morpheme internal foot selection, so some other account must be given for the identical patterning of these two foot types.
In a language with only one stress per word (i.e. no secondary stress), there is a "conflation" of the lines intervening between the highest line (the result of the end rule) and the lowest line (syllable heads). Conflation also removes all bracketing except for that of the constituent whose head remains.

The HV framework admits a rich inventory of possible feet, defined by the parameters ±HT (head terminal) and ±BND (bounded). Bounded head-terminal constituents are binary. Bounded non-head terminal constituents are ternary, with the head in the middle. Unbounded constituents must be head terminal. For all non-ternary constituent types, the direction of headedness (left or right) must also be defined.

Extrametricality is also utilized. In a cyclic derivation, the Free Element Condition (FEC) is obeyed (Prince 1985, Halle & Kenstowicz 1991). For a more detailed overview of the theory, see Halle (1990).

Halle (1990) claims certain limitations on the use of lexical (idiosyncratic) brackets, among them that in a language that builds feet left to right, only left edge boundaries may be used, and for languages that build feet right to left, only right edge boundaries may be used. This is an intuitively natural dependence of the constituent boundary that may be specified (left or right) on the direction of constituent formation (left-to-right or right-to-left).

It is not clear that a direction of parsing feet can be established for Abaza, since with unbounded feet and pervasive lexical foot structure, the same results obtain whether a string is parsed right-to-left or left-to-right. According to Halle's constraints, then, it is unclear whether Abaza should be allowed right or left constituent boundaries. If the allowable lexically specified constituent boundaries are determined by headedness, however, Abaza should be allowed only right constituent boundaries, since its feet are right-headed. This is exactly what we need to give prestressing.

The general concept of edges of (foot) constituents can be expressed by right bracket notation, ), in the HV framework. The stressed root $z_1$ 'cook' and the prestressing root $z^2$ 'drink' thus have the following underlying representations:

\[
\begin{align*}
\text{cook} & \quad /z_1^/ \\
\text{drink} & \quad /\text{z}^2/
\end{align*}
\]

Given that only right edges of constituents can be lexically specified, if the location of any lexically specified constituent boundary is entirely free, then for any root of \( n \) syllables, there are in principle \( n+1 \) possible positions for it, as in (12). This correctly predicts prestressing, which corresponds to constituent boundary number 1 in (12). Roots which stress a root-internal vowel are marked with an edge of constituent foot immediately to the right of the stressed vowel. A right edge of constituent marker word-finally (i.e. as far right as possible in a word) will give stress on the final syllable. This immediately accounts for the fact that there are no post-stressing roots, since there is no way to specify anything further to the right.

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8 Hayes (1991) argues against allowing ternary feet at all, which makes the feature \( \bar{\bar{\text{HT}}} \) unnecessary.
9 The possibility also exists that the direction of headedness of prosodic constituents plays a role in the allowable constituent boundary that may be idiosyncratically specified. Thus right-headed constituents would correspond to right edge boundaries and left-headed ones to left edge boundaries. Otherwise, pre-prestressing and post-poststressing are predicted.
10 There are, however, other processes in Abaza which operate right-to-left. Colarusso (1975) argued for vowel epenthesis based on a right-to-left algorithm. This can be viewed as one facet of syllabification (cf. Ito, 1989), which also must operate right-to-left. Voicing assimilation is also regressive.
The HV algorithm for assigning stress in Abaza is to allow unbounded right-headed feet to be built exhaustively and maximally, so long as they respect lexically specified edges of constituents. It will be shown below that competing stresses are resolved by the End Rule Left. The following set of rules is a first approximation of an algorithm that accomplishes this:

(13) (i) Place * on line 0 over heads of syllables.
    (ii) Line 0 parameter settings: unbounded, right-headed.
    (iii) Build constituents on line 0, and locate heads on line 1.
    (iv) Line 1 parameter settings: unbounded, left-headed.
    (v) Build constituents on line 1, and locate heads on line 2.
    (vi) Conflate lines 1 and 2.

Rule (i) reflects the fact that stress rules operate on syllable nuclei. Rule (ii) specifies unbounded, right-headed feet, and rule (iii) actually constructs constituents (feet) according to the specifications in (ii). Rule (iv) defines End Rule Left, and Rule (v) constructs the structure specified by (iv). Rule (vi) eliminates the intermediate structure between the primary stress (line 2) and syllable heads (line 0) because there are no secondary stresses in Abaza. The derivations for the forms in (4a), (4c) and (9b) can be seen in (14).

(14a) UR /a-)bizš¹a/ (b) /bizš¹a-kʷa/ (c) /yi-g¹-si-)jš²-wa-m/¹²

(i) *
abizš¹a

(iii) *
abizš¹a

(v)

(vi)

¹¹ Thanks to Armin Mester for suggesting the use of unbounded, as opposed to binary, feet, and for pointing out a number of advantages of such an analysis.
¹² The UR forms in these derivations are the input to foot construction, and have already been syllabified (interacting with foot structure where necessary). See section 2.3 below.
This algorithm accounts directly for the default to the final syllable (seen primarily in nouns). The default occurs when there is a prestressing root without prefixes. This gives an underlying form with no internal lexically specified constituent boundaries which could break up the maximal unbounded foot. Maximal foot formation thus constructs a single foot on the whole word, and the right-headedness of feet accounts for stress on the final syllable, as in (14b).

2.3 Syllable Structure

Syllable structure in Abaza interacts with foot construction. A brief description of the relevant syllabification facts is given here. A primary concern in the phonological analysis of Abaza has had to do with the alternation between the high vowel and zero, which is highly predictable. Both vowel epenthesis and vowel deletion analyses have been proposed (see below). The account given here utilizes the epenthesis approach, following Selkirk (1981), Ito (1986, 1989) and others.13

The syllable nucleus in Abaza consists of a vowel or a syllabic nasal. Open (onsetless) syllables occur only word-initially, and only with the low vowel [a]. The syllable coda in Abaza consists of a single consonant. A filled coda (i.e. closed syllable) is preferred, as will be seen in the algorithm for syllabification. At the right edge of a word, sequences of two consonants can be found, such as in (15). These are usually of the type sonorant plus obstruent,14 labial stop plus coronal fricative, or fricative plus stop (with affricates patterning as stops throughout). I assume that the cases in (15a) are allowable complex codas, whereas in (15b) and (15c) the final consonant is extrametrical.15

(15a)

ˈaʒərant
amʃ
psart
ˈdalalt

'the sky'
'the day'
'scissors'
's/he went in'

(15b)
apʃ
tˈkʷops

'like it'
'drop (of water)'

(15c)
phask'
tʃift
jʃast

'a woman'
'plow'
'give it to me!'

Syllable onsets may consist of one or two consonants. There are various licit combinations of two consonants. The most common two are (i) a voiceless (non-labial) fricative plus a voiceless (or glottalized) stop, or (ii) a voiceless stop plus a voiceless (usually coronal) fricative. Colarusso (1975) observed a special case of (ii), consisting of a labial stop (voiced or voiceless, but not glottalized) and a

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13 Thanks to Junko Ito for encouraging me to pursue the vowel epenthesis alternative.
14 If the final obstruent is a fricative, the sonorant is a nasal in almost all cases.
15 There are two sources of extrametricality. One is if the final consonant is coronal. The second occurs with certain morphemes that correspond to higher syntactic structure (e.g. determiner and complementizer). In the latter case, the morphemes in question fail to participate in other phonological processes, such as foot construction.
fricative agreeing in voicing, which functions more closely as a "unit" (see, for example, the coda possibilities in 14b). Examples can be seen in (16) and (17), respectively.

(16)

\begin{align*}
\text{'ʃkʷo̞kʷə} & \quad \text{'white'} \\
\text{'ʃtʰəxʰi} & \quad \text{'behind'} \\
xʰtə & \quad \text{'cold'} \\
xʰpə & \quad \text{'our son'}
\end{align*}

(17a)

\begin{align*}
\text{kʃa'ra} & \quad \text{'to strike'} \\
\text{qsa'ra} & \quad \text{'to saw, cut off'} \\
\text{tʰamada} & \quad \text{'tamada (social position)'}
\end{align*}

(17b)

\begin{align*}
bʒi & \quad \text{'+tongue'} \\
bʒas & \quad \text{'+hawk'} \\
xpjizra & \quad \text{'+to dream'} \\
phəs & \quad \text{'+wife, woman'}
\end{align*}

Additionally, an obstruent plus a sonorant is allowed, as in (18). The sequence of stop plus sonorant can be seen in the (a) examples, with fricative plus sonorant in the (b) examples.

(18a)

\begin{align*}
\text{'dlimap} & \quad \text{'+she has him/her (brother or sister)'} \\
bna & \quad \text{'+forest'} \\
grəsə & \quad \text{'+walnut'} \\
dxjimap & \quad \text{'+he has him/her (brother or sister)'}^{16}
\end{align*}

(18b)

\begin{align*}
\text{sla} & \quad \text{'+my dog'} \\
\text{'snej}t & \quad \text{'+I go'} \\
\text{sr}təh²ə & \quad \text{'+snowstorm'} \\
\text{swi}st & \quad \text{'+I hit you'}
\end{align*}

Certain sequences appear to be licit onset clusters, but they can be better analyzed in other ways. The sequence of a nasal plus an obstruent, as in (19), can be treated as a syllabic nasal plus a simple onset to the following syllable. One piece of evidence for this is that it may be followed by an acceptable onset cluster, as in (19b). A sequence of two stops, as in (20), should be treated as two syllables, with the nucleus of the first syllable being a very brief "excrescent" vowel. This allows for long "clusters," as in (20b). The presence of such vowels accounts for the lack of voicing assimilation in these cases.\(^{17}\)

\[^{16}\text{The form }[\text{djimap}], \text{ and the parallel }[\text{swi}st] \text{ in (18b), shows a semi-vowel immediately preceding a high vowel. The syllabification algorithm to be presented below predicts that these semi-vowels should be syllabified instead of allowing a vowel to be inserted. In both these cases, however, the high vowel is } \text{underlying} \text{ and not epenthized.}\]

\[^{17}\text{Voicing assimilation between an obstruent in coda position and an obstruent in the onset position of a following syllable is obligatory. In more rapid rates of speech, epenthetic vowels may be unrealized, but without voicing assimilation between onset and coda of the same syllable. This provides evidence for the presence of something in nucleus position.}\]
There are also a few cases of fricative plus fricative. It is possible to analyze this as a case of the first fricative having an excrescent vowel, which is absorbed into the frication. Again, the lack of voicing assimilation between the two segments argues for the presence of some intervening vowel.

The analysis presented here follows Ito (1986, 1989), who has defined syllabification in terms of directionality (of parsing) and maximality (taking the largest acceptable syllable). For Abaza, syllables are constructed right-to-left, and maximal syllables include a single coda consonant in all cases except word-finally. Single segments are taken as onsets, as well, except in the case of labial stop plus fricative, where the combination is taken as a licit onset. Once the onset and coda have been identified, a high vowel is supplied epenthetically as a syllable nucleus if there is no other possible nucleus already present.

Syllabification crucially interacts with foot building in that the point of origin for right-to-left syllabification begins at the head of every foot. (With exhaustive parsing, this necessarily includes the right edge of the word.) When a foot is specified lexically, its head must dominate a syllable. That syllable is the reference point for right-to-left parsing of syllables. Examples can be seen in (22)-(25).

In the derivations in (22)-(25), (a) is the underlying form. The step in (b) shows syllables formed to accommodate the requirement that a foot dominate a syllable. Step (c) shows syllabification from right to left, taking already formed syllables as a starting point. Obstruents are taken as onset or coda; sonorant consonants may also be taken as syllable nucleus if the template permits. The final step, (d), shows vowel epenthesis or syllabification of sonorants to fill empty nucleus positions.

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18 This argues for an extrametricality analysis for all other cases of two onset consonants that cannot be reinterpreted as two syllables.

19 The sonorant consonants include /j, w, m, n, l/, but not /r/.
(22a) * 
/ j-s-dr-x-j-d/ 
3s-1s-know-again-PRES-PRED
(b) F F
   |   |
  σ σ
  μ μ
js d r) xj<d>
(c) F F
   |   |
  σ σ σ
  μ μ μ
js d r) xj<d>
(d) F F
   |   |
  σ σ σ σ
  μ μ μ μ
jis br d r xid
[jiz'dirxit] 
'I remember it'

(23a) * 
/ j-s-b-)r-dr-x-j-d/ 
3s-1s-2sf-CAUSE-know-again-PRES-PRED
(b) F F
   |   |
  σ σ
  μ μ
js br d r xj<d>
(c) F F
   |   |
  σ σ σ σ
  μ μ μ μ
js b r d r xj<d>
[jizbır’dırxít]
'I remind you(fem.) of it'

(24a) /d-g¹-s-ba)-w-m/
3s-INTEN-1s-see-PRES-NEG

[I don't see him/her']

(25a) /d-g¹-s-m-ba)-d/
3s-INTEN-1s-NEG-see-PRED
There have been two general approaches taken to account for the highly predictable distribution of the high vowel in Abaza. The above syllable structure analysis assumes vowel epenthesis to account for the alternation of high vowels, following Allen (1965) and Colarusso (1975), for example. Most Russian scholars (eg. Genko 1955, Tugov 1967) have utilized a vowel deletion analysis, in which the morphemes have underlying high vowels, which are then deleted by rule.

Given a vowel deletion analysis, the current proposal regarding foot structure would utilize binary feet instead of unbounded constituents. This would allow the environment of the vowel deletion to be expressed in terms of foot structure, namely that high vowels in a syllable not dominated by the head of a foot be deleted. This would give the following derivation for the structure in (23).

(26a)

\[
\text{/ji-si-bi-)ri-dir-xi-j-d/}
\]

3s-1s-2sf-CAUSE-know-again-PRES-PRED

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\[2^0\] Kuipers (1960) argues that Kabardian, a related language has a single vowel, based on the same sort of pattern of a completely predictable high vowel. The Abaza high vowel is not entirely predictable, which can be accounted for by positing underlying high vowels in addition to those that are epenthesized.
Step (b) in the derivation builds binary feet right to left, respecting lexically specified foot structure. In (26c) high vowels in the weak position of a foot are deleted, and in step (d) the form is resyllabified.

Both analyses given here accord with Prince's (1985) claim that all feet are maximally binary. (In the unbounded foot analysis, a binary foot is taken as a starting point, with remaining syllables stray adjoined.) The binary foot analysis, however, conflicts with the claim by Hayes (1987, 1991) that iambic feet, as those in Abaza would be, are found only in quantity sensitive languages.

I assume a vowel epenthesis analysis to account for the alternation of the high vowel in Abaza. This allows (requires) unbounded feet to be used in the proposal given here, which follows HV.

2.4 Intermediate Prefixes

Further evidence for the End Rule Left can be seen when two or more morphemes of a word have a lexical edge of foot constituent. In those cases, the leftmost foot wins. This may occur when there is at least one prefix with a lexically assigned foot edge.

The following examples show two "intermediate" prefixes, /r-/, the causative morpheme, which is prestressing, and /z/-/, a modal marker indicating ability, which stresses its underlying vowel.

(27) j -r -tsa)-j -d [jirtsit]
    3sm-CAUSE-go -PRES-PRED
    He causes (them) to go.

(28) s -z) -tsa)-wʃ -d [si'zitsuʃt]
    1s-can-go -FUT-PRED
    I will be able to go.

Intermediate prefixes can be prestressing or self-stressing (i.e. stressing a vowel of the prefix), which is parallel to the options for the nominal and verbal roots. They are therefore marked in the lexicon with
the edge of a foot constituent. This gives the derivations seen in (29) for examples (27) and (28). Note that tsə 'go' is a root with a foot edge to the right of the root vowel: tsə.

(29a) UR /jì-r-tsa)-j-d/  b) /si-zi}-tsa)wʃ-d/

(i) * *)  * *)  * )  * )
jırtṣid  sızıtsuʃd

(iii) * *  * *  * *
(*) (*)  (* *)  (*)
jırtṣid  sızıtsuʃd

(v) *  *
(*) (*)  (* *)  (*)
jırtṣid  sızıtsuʃd

(vi) *  *
(*) *  (*) *
jırtṣid  sızıtsuʃd

PR jırtṣit  si'zıtsuʃt

3 The Stress Hierarchy

In addition to the prestressing phenomenon in Abaza, there is a relative hierarchy of affixes and roots which further complicates the stress picture. This hierarchy involves a three-way "strength" contrast among the prefixes, a two-way contrast among the roots, and a two-way contrast among the suffixes. Whichever morpheme in the word places highest on the hierarchy receives stress, with ties decided by the End Rule Left. Descriptively, the hierarchy can be stated as follows:

Strong Prefix > Strong Root > Strong Suffix >
Intermediate Prefix > Weak Root >>
Weak Prefix, Weak Suffix

Weak prefixes are stressed only by virtue of a prestressing prefix or root to the immediate right. Weak suffixes are stressed only by default (i.e. when suffixed to a prestressing root that has no prefixes). Otherwise, both types are stressless.

The previous discussion has already accounted for the lower part of the hierarchy. Intermediate prefixes and weak roots have the same foot structure specified in the lexicon, but the prefix receives stress through the End Rule Left. Both intermediate prefixes and weak roots rank higher than weak suffixes, since the latter have no (lexically specified) foot structure.

Chart 2 demonstrates how the current proposal accounts for this hierarchy. Strong prefixes, strong roots and strong suffixes are all lexically marked with a head of a constituent (*). Their order on the hierarchy with respect to each other is determined by End Rule Left. Intermediate prefixes and weak roots are lexically marked with a constituent boundary. Their placement on the hierarchy with respect to each other is likewise determined by the End Rule Left. The relative ordering of the two sets is determined by the fact that lexically specified heads of constituents outrank lexically specified
constituent edges. Weak prefixes and weak suffixes have no lexically specified foot structure, and are lower on the hierarchy than both types that have lexically specified foot structure.

<table>
<thead>
<tr>
<th>*</th>
<th>Strong Prefixes</th>
<th>Strong Roots</th>
<th>Strong Suffixes</th>
</tr>
</thead>
<tbody>
<tr>
<td>)</td>
<td>Intermediate Prefixes</td>
<td>Weak Roots</td>
<td>Weak Suffixes</td>
</tr>
<tr>
<td></td>
<td>Weak Prefixes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Chart 2

3.1 Strong Roots

With strong roots, End Rule Left does not seem to apply. The verb root in the following examples is dir 'know', with the meaning 'teach' or 'learn' when combined with the causative morpheme j|. It is the root, dir, though, which is stressed in this combination, and not the prefix with a boundary-defined foot. This contrasts with forms like (27)/(29a), repeated here as (31), in which the prefix having a boundary-defined foot takes precedence over the root. The combination of the causative plus the root is underlined in both cases.

(30a) jijir'dirit 'He teaches (it to) them'
(30b) jilir'dirit 'She teaches (it to) them'
(30c) jig'simir'dirt 'He didn't teach it to me'

(31) jirt'sit 'He causes (them) to go'

Based on the algorithm in (13), we would expect stress to fall on the syllable lir in (30b). The faulty derivation is given in (32).

(32) UR /ji-li-)r-dir)-j-d/

(i) * *) *)*
  jilirdirid

(ii) * * *
  (* *) (*)(*)
  jilirdi rid

(iii) * *
  ( * * *)
  (* *) (*)(*)
  jilirdi rid

PR *jilirdirit

3.2 Lexically Marked Heads of Feet

The root dir 'know' belongs to the class of "strong" roots. In order to account for the greater relative strength of strong roots, I propose that they are lexically marked with the head of a foot constituent, as
in (33). Lexically marked heads of constituents take precedence over lexically marked boundaries or edges of constituents, in that a head is always stressed in preference to a lexically specified constituent boundary, even if this violates the End Rule Left.²¹

\[
\begin{align*}
\text{dir} & \quad \text{vs.} \quad \text{tsa} & \quad \text{vs.} \quad \text{gi} \\
\text{strong} & \quad \text{interm.} & \quad \text{interm. prestressing}
\end{align*}
\]

A constituent head, *, can be viewed as a constituent head plus its (necessarily) corresponding constituent boundary, *). Under this interpretation, the relationship between lexically specified constituent heads, *, and lexically specified constituent boundaries, ), is thus one of proper inclusion. This strongly resembles the conditions for the application of the Elsewhere Condition (Kiparsky 1973, 1982). This similarity suggests a non-arbitrary account of why lexically marked constituent heads take precedence over lexically marked constituent boundaries. It would be unexpected to find a system in which plain constituent boundaries were somehow stronger than corresponding constituent heads (plus corresponding boundaries).

In the HV framework, strong roots can be designated as having an asterisk in the lexical specification. In order to achieve the correct ranking of lexical asterisk over lexical bracket, we need to modify the algorithm in (13). This can be done in rule (iv) of (34), by adding the condition that line 1 must be empty in order to locate the heads of feet that are defined by their edges in the lexicon.²² This has the same effect as invoking the Elsewhere Condition, although such a rule achieves the result by stipulation rather than as a consequence of the framework.

\[
\begin{align*}
\text{(34)} & \quad \text{(i)} \quad \text{Place * on line 0 over heads of syllables.} \\
& \quad \text{(ii)} \quad \text{Line 0 parameter settings: unbounded, right-headed.} \\
& \quad \text{(iii)} \quad \text{Build constituents on line 0.} \\
& \quad \text{(iv)} \quad \text{Locate heads of line 0 constituents on line 1 if line 1 is empty.} \\
& \quad \text{(v)} \quad \text{Line 1 parameter settings: unbounded, left-headed.} \\
& \quad \text{(vi)} \quad \text{Build constituents on line 1, and locate heads on line 2.} \\
& \quad \text{(vii)} \quad \text{Conflate lines 1 and 2.}
\end{align*}
\]

Lexically specified heads will be listed in the lexicon with an asterisk on line 1. In a form having a root with a head-defined foot, there will be an asterisk on line 1 to begin a derivation. Any feet which are lexically specified by boundaries will not be able to project their heads onto line 1 because of the

²¹ Halle and Kenstowicz (1991) argue that brackets (comparable to edges of constituents) are more stable than asterisks (heads of constituents), as asterisks are deleted in a cyclic derivation but brackets remain. Their claim does not contradict the claim made here that heads take precedence over boundaries in foot construction, but it is likely that there is some connection between the two boundary-head relationships. Further research is needed to determine what that relationship is.

²² An alternative is to list these stronger forms in the lexicon with prespecified asterisks on both line 1 and line 2. This predicts the possibility of a contrast of more than two stress strengths of this type, since there is, in principle, no reason why just two (or three, or any number of) idiosyncratic asterisks are allowed.
condition in rule (iv), and so will be transparent to the End Rule. For forms with a root not having a head-defined foot (nor any head-defined affixes, see below), line 1 will be empty from the start of the derivation through rule (iv), and boundary-defined feet can project their heads onto line 1, where they will be visible to the End Rule.

3.3 Apparent Weight

Many roots which have lexically specified heads of feet have the form CVC. Some examples include:

\[ \text{d} \text{i} \text{r} \quad \text{know} \]
\[ \text{ʕ} \text{ay} \quad \text{come} \]
\[ \text{n} \text{a} \text{y} \quad \text{go} \]

This opens the question of whether there is any weight sensitivity involved in the Abaza stress system. Despite these examples, there is evidence that weight does not play a role in the stress system, as there are contrasts in syllable structure and lexically assigned foot structure throughout the system. The following chart presents some examples of the various types:

<table>
<thead>
<tr>
<th>Heads of Feet:</th>
<th>CV</th>
<th>CVC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roots</td>
<td>'tʃ'az'a</td>
<td>speak</td>
</tr>
<tr>
<td>Prefixes</td>
<td>a'ba</td>
<td>where</td>
</tr>
<tr>
<td>Suffixes</td>
<td>ra</td>
<td>INF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>nis</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Edges of Feet:</th>
<th>CV</th>
<th>CVC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roots</td>
<td>ba</td>
<td>see</td>
</tr>
<tr>
<td>Prefixes</td>
<td>r</td>
<td>CAUSE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nothing:</th>
<th>CV</th>
<th>CVC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prefixes</td>
<td>s</td>
<td>1sg.</td>
</tr>
<tr>
<td>Suffixes</td>
<td>xa</td>
<td>become</td>
</tr>
<tr>
<td></td>
<td></td>
<td>an'ba'</td>
</tr>
<tr>
<td></td>
<td></td>
<td>wʃ̂</td>
</tr>
</tbody>
</table>

Chart 3

If syllable weight is a (major) factor in foot structure, the unexpected forms in Chart 3 are those (a) having heads of feet and CV syllable structure, and (b) having no foot structure, yet CVC syllable structure. A rough survey of the Abaza data reveals that none of these types is exceptional. The CV prefixes with a head of a foot actually outnumber CVC prefixes with a head of a foot by virtue of the fact that I haven't found any of the latter.

3.4 Strong Suffixes

Strong suffixes are stressed unless there is a strong prefix or root in the word. They are lexically specified with the head of a constituent, like the strong prefixes and strong roots. The End Rule Left accounts for the fact that prefixes and roots with equivalent foot structure are stressed in preference to

\[ \text{23} \quad \text{There are few closed syllables among the prefixes, and I know of none which are lexically specified with the head of a foot.} \]
\[ \text{24} \quad \text{The closed syllable in this case is not marked. Rather it ends up forming the weak member of the foot headed by the open syllable ba.} \]
suffixes. In (35) and (36), the suffixes -ra 'INFINITIVE' and -nis 'PURPOSE' are strong, that is having a head-defined foot.

(35a) \(zˁ-ra\) 'to drink, to cook'
(b) ts-a-ra 'to go'
(c) wi-tsa-nis 'for you to go'

(36a) \(dɨ-ra\) 'to know'
(b) yi-si-r-\(dɨ-nis\) 'for me to learn it'

The roots \(zˁ\) 'drink', \(zˁ\) 'cook' and ts-a) 'go' each have a lexically assigned edge of constituent boundary. The strong suffixes -ra and -nis are stressed in (35), indicating a lexically specified head of constituent, which wins out over the boundary in the roots. The root dir 'know' in (36) is a strong root, with its own lexically specified head of a constituent. It wins out over the suffixes -ra and -nis as expected, because of the End Rule Left. In (36b) the root dir also wins out over the prefix r- 'cause'), which has a lexically specified foot boundary. The derivations for (35c) and (36b) follow:

<table>
<thead>
<tr>
<th>(37a)</th>
<th>UR</th>
<th>b)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>b)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>/wi-tsa-nis)/</td>
<td>/ji-si-r-dir-nis)/</td>
</tr>
</tbody>
</table>

(i) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\)
| witsanis | jisirdirnis |

(iii) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\)
| witsanis | jisirdirnis |

(iv) -

(vi) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\)
| witsanis | jisirdirnis |

(vii) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\) \(\ast\)
| witsanis | jisirdirnis |

PR \[witsa\'nis\] \[jisir\'dirnis\]

In both cases, rule (iv) does not apply, locating a head of the line 0 constituents on line 1, since line 1 already has lexically specified structure in it.

All nominal and verbal roots obligatorily have some lexically specified foot structure (either the edge or the head of a foot). Affixes, however, may be unmarked. There should therefore be a three-way contrast in the suffixes if they have the potential for all the same representations as the roots - nothing, foot edges and heads of feet. There is, however, only a two-way contrast in the suffixes.
Within the given algorithm there is an explanation for this apparent gap. Suffixes with simple foot boundaries will always be derivationally neutralized with weak suffixes (no foot structure) since every root must contain some foot structure (either a foot head or a foot boundary) due to the language specific requirement mentioned above and the End Rule Left. If the root is weak (i.e. having a boundary-defined foot), it will be stressed in preference to a suffix with a boundary-defined foot by the End Rule Left. If the root is strong (having a head-defined foot), it will be stressed in preference to the suffix both because of the End Rule and the priority of lexically marked heads of feet over lexically marked foot boundaries.25

3.5 Strong Prefixes

Unlike suffixes, prefixes should be expected to show the full three-way contrast in foot structure (nothing, constituent boundary, constituent head), since the End Rule Left gives preference to prefixes above both roots and suffixes. This is, in fact, the case.

In (38) the prefix aba- ‘where’ is stressed, in spite of the presence of the suffix having a head-defined foot (i.e. lexically marked with the head of a foot), -wa (participle). The root tsə ‘go’ and the prefix jə- ‘(cause)’ in (38b) have lexical boundaries, and both are unstressed, indicating that aba- has at least a lexical boundary (because of End Rule Left). The facts are all easily explained if aba- has a lexically specified constituent head. Derivations for the forms in (38) are given in (39).

(38a)  da'ba'atsawa  'where is s/he going?'
       /d-aba-tsa-wa/
       3s-where-go-PART

(b)  ja'bayirtsawa  'where is he causing
       /j-aba-ji-r-tsa-wa/
       3p-where-3s-CAUSE-go-PART

(39a)  UR  *  *  b)  *  *
       /d-aba-tsa)-wa/  /j-aba-ji-r-tsa)-wa/

(i)  *  *  *  *  *  *  *
    *  *)  *)  *)
    dabatsawa  jabajirtsawa

(iii)  *  *  *  *
       *  *)  *)
       daba tsə wa  jaba jirtsə wa

(v)  -  -

25 It is theoretically possible to find a lexical foot boundary in a suffix, i.e. where it follows a prestressing root that has no prefixes. Additionally, though, the suffix in question must have other (provably non-extrametrical) suffixes following it, so that its stress is clearly the result of a lexically specified foot edge and not the default. I have found no such forms, which may be due to the relatively small number of suffixes which may be added to an unprefixed verb.
3.6 Summary

The proposal presented here is that both edges and heads of foot constituents must be allowed to be listed in the lexicon. Lexically specified heads of constituents are stressed in preference to lexically specified boundaries.

This accounts for both of the problematic phenomena in the Abaza stress system — prestressing and the hierarchy of various morpheme types. Prestressing is accounted for by positing (right) foot boundaries at the left edge of a morpheme. The hierarchy is accounted for by the interaction of the End Rule Left and the fact that lexically specified heads of feet take precedence over lexically specified foot boundaries.

This proposal accounts for the fact that all prestressing roots and prefixes are of the intermediate strength (i.e. stress preferring, but not the strongest), since this intermediate strength is a result of lexically specified foot boundaries, and prestressing can only occur because of a boundary (i.e. no lexically marked constituent head may be present). The difference between the strongest and intermediate levels is correctly predicted to occur only on root (or prefix) vowels.

This proposal also accounts for the apparent gap in the types of affixes, namely that suffixes only occur strong or unstressed, but not intermediate (with the potential to be prestressing). This is related to the gap created by the fact that roots must minimally have a lexically specified foot boundary. That plus the End Rule Left combine to eliminate the possibility for suffixes with lexical boundaries.

4 Alternative Analyses

There are other plausible analyses of the Abaza stress pattern. This section will discuss two possibilities. The assignment of the features "dominant" and "recessive" to each syllable has been proposed previously, but left some aspects of the system unaccounted for. A lexical/cyclic approach suggests itself, but cannot be maintained with a strict ordering of levels.

4.1 Dominant and Recessive Morphemes

Dybo, Nikolayev and Starostin (1978) argue for a different analysis of Abaza stress. Dybo, Nikolayev and Starostin (DNS), account for the placement of stress by positing the features D (dominant) and R (recessive), which are assigned lexically to every syllable (not just every root/affix). Stress is then located on the first D syllable which is not itself followed by a D syllable. For words composed entirely of Ds, or of a sequence of Rs followed by a sequence of Ds, the final D of the word is a D.

Spruit (1986) offers a similar analysis for Abkhaz, a closely related NWC language.
without another D following, so it receives stress. A word composed entirely of Rs is stressed on the final syllable as a default. Some example derivations can be seen in (40):

\[(40a)\] D D R  \hspace{1cm} (b) D RR

\[
\begin{array}{c}
\text{si}-\ddash^-d \\
[z\ddash^i t] \\
'I cooked'
\end{array}
\hspace{1cm}
\begin{array}{c}
\text{si}-\ddash^-d \\
[siz\ddash^i t] \\
'I drank'
\end{array}
\]

The root-stressing verb, \(z\ddash^i\) 'cook', is a D syllable, whereas the stress-avoiding root, \(z\ddash^i\) 'drink', is an R syllable. The verbal agreement prefixes (\(s\ddash^i\) in this case) are taken to be D, and the mood marker -d is R. This gives the configuration DDR for (40a), with stress consequently on the second syllable since the first D is followed by another D. In (40b), the sequence DRR places stress on the initial syllable, since that D is not followed by another D.

The problem with the DNS analysis is that it does not account for all of the data. This can be seen clearly in the prefixes. The difference between root-stressing and prestressing roots is captured by positing root-stressing roots with an initial D and prestressing roots with an initial R. Prefixes with a head-defined foot require a D as well, but when they precede a D root, they can’t get stressed. The form \(dabatsawa\) cannot be expressed in this system:

\[(41)\] D D D D

\[
d-aba-tsa-wa
\]

4.2 A Lexical/Cyclic Approach

One might be tempted to treat the Abaza stress alternations as the result of levels of affixation (after Kiparsky 1982, for example). Within such an analysis, prefixes with a boundary-defined foot would probably be the first level, followed by affixes with a head-defined foot, and finally weak affixes (probably post-lexically, so as to avoid stress at all). Strong roots would be marked lexically as being idiosyncratically stressed.

Numerous difficulties present themselves for such an analysis, the most obvious being that the possible linear orders of the affixes do not correspond to the levels. Assuming that strong prefixes are of one level, intermediate prefixes are of another, and weak prefixes are of a third (whether post-lexically or not), there should be restrictions on the possible orders of the prefixes based on levels. It should only be allowed that the type of prefixes with the lowest or first level occur closest to the root, the next level prefixes occur outside of that, and the third type always occur outermost. There is, however, no such restriction. The causative morpheme \(r\ddash\), which is an intermediate (prestressing)

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27 DNS seem to assume the high vowels are underlying, and the correct placement of high vowels is achieved through vowel deletion rather than epenthesis. This follows other Russian analyses (eg. Genko 1955, Tugov 1967).

28 Two possible modifications in the DNS system could possibly account for this: one is to designate the strong affixes and roots as "superdominant," and have a rule changing D to R to the immediate right of a superdominant. The second is to link the sequence D-R to the strong affixes and roots, so that the D part will necessarily always be followed by an R, and thus stressed. Either of these brings the DNS analysis closer to the one proposed here, but requires modifications to their system, a discussion of which goes beyond the scope of this paper.
prefix, always occurs immediately preceding the verb root, with both strong and weak prefixes allowed to precede it (see, for example (38b)). The relative agreement marker zi-, also a prefix having a boundary-defined root, may occur to the left of all other prefixes, strong and weak alike. Since the orders of the prefixes does not correspond to the orders of the levels (regardless of how the stress types are ordered), something other than level ordering must be at work in the Abaza stress system.\(^{29}\)

5 Tone/Accent

Dybo, Nikolayev and Starostin (1978) report an interesting phenomenon in support of their dominant and recessive analysis. They claim that a high pitch is realized when stress falls on a dominant syllable\(^ {30}\) and a low pitch occurs on a stressed recessive syllable. Since recessive syllables can only be stressed word-finally, this pitch distinction is contrastive in Abaza in one environment only, namely on stressed word-final syllables.

In the DNS system, a simple stipulation associates a low pitch with a stressed R, and a high pitch with a stressed final D. A sequence of Ds and a sequence of Rs have the same status within the system, and it is a random fact that a low tone happens to cooccur with one and a high tone with the other.

The current proposal offers a less stipulative account of the pitch distribution. A sequence of Rs throughout the whole word, which is the only combination that allows a recessive syllable to be stressed, corresponds to a prestressing root with no prefixes and no lexically specified foot structure in any of the suffixes.\(^ {31}\) A word-final stressed D corresponds to a lexically specified foot associated with the final syllable. In both cases, there is a single foot built on the whole word. The difference between the two cases is that a high tone appears on the final syllable (head of the foot) if the foot structure is lexically specified. If the head of the foot is not lexically specified, it gets a low tone. The distinction can thus be easily accounted for if the high tone comes associated with the lexically specified foot structure (perhaps as the remnant of an earlier pitch-accent stage of the language), and the low tone is simply a phrase final lowering (Armin Mester, p.c.).\(^ {32}\)

Given that a high tone is necessarily associated with lexically specified foot structure, the question arises why there is only one high pitch when there is more than one lexically specified foot. Conflation within the HV framework offers an answer to this question. Since Abaza has only one stress per word, all the lines of structure between the topmost (primary stress) and the bottommost (syllable heads) are conflated. Not only are non-essential asterisks deleted, but also the constituent boundaries associated with them. This would include lexically specified constituent boundaries, and a high tone associated with the deleted constituent boundaries would also be deleted.

A second, and more challenging, question is posed by the lack of a high tone on stressed syllables word internally, as occurs in the dialect I have studied most. An answer to this question is beyond the scope of this paper, however it should not be difficult to account for this. A single (stipulative) rule

\(^{29}\) For a more detailed presentation of the difficulties in a cyclic account, see Idsardi (1991), who shows that a cyclic approach with stress erasure is inferior to a boundary placement account for the Interior Salish languages.

\(^{30}\) My own instrumental analysis using a CECIL speech analysis box clearly shows the pitch distinction on word-final syllables, but I have found no evidence for a high tone on word-internal stressed syllables. This may be a dialectal difference.

\(^{31}\) Note that the DNS system merges prestressing forms with weak affixes, and intermediate prefixes and weak roots with strong forms to give a two-way distinction instead of three.

\(^{32}\) This does not, however, account for the fact that non-stressed syllables have a neutral tone (neither high nor low) word-finally.
that deletes high tones unless they are word-final would be one way to achieve the correct results. Another option would be to have the high tone linked not to all lexically specified foot structure, but just to those that occur word-finally.33 In this case, there would be no deletion or insertion of high tones.

With respect to the high tone, the Abaza dialects studied by DNS operate as purely pitch-accent systems. The dialect I have studied is less clearly a pitch accent system. In both cases, the behavior of the tone supports the analysis given here for the foot structure of Abaza, since the tone alternation corresponds directly to the difference between lexically specified and non-lexical foot structure. The HV framework provides equal treatment of stress systems and pitch-accent systems, but seems especially well-suited to pitch-accent systems. The pitch-accent type behavior of Abaza, even if it, or a dialect of it, is truly a phonetic stress system, accounts for the relative ease with which the HV framework handles the stress pattern in Abaza.

6 Conclusion

The stress system of Abaza is lexically driven, with individual roots and affixes assigning foot structure. Both prestressing and the hierarchy of roots and affixes are accounted for in the current proposal. Prestressing, where the syllable immediately preceding the relevant root or affix is stressed, is accounted for by a lexically specified edge of a foot placed at the left edge of the morpheme. The hierarchy is accounted for by allowing there to be two strengths of foot structure represented in the lexicon -- boundaries of feet and heads of feet -- and an End Rule (Left).

From these two proposals, plus the End Rule Left and the requirement that nominal and verbal roots have a minimal foot structure in the lexicon, all the facts of the Abaza stress system fall out. Given a three way contrast between heads of feet, edges of feet and no foot structure, and a three way contrast between prefixes, roots and suffixes, there are in principle nine types of morphemes structurally. There are, however, only seven observed types. The language specific requirement that nominal and verbal roots inherently have lexically specified foot structure accounts for one of the two holes in the system, namely roots with no foot structure. The absence of roots without lexically specified foot structure, in conjunction with the End Rule Left, accounts for the absence of suffixes with lexically specified constituent boundaries, since there is no way to distinguish them from suffixes with no lexically specified foot structure.

The current proposal also accounts for the fact that prestressing forms only occur in the intermediate strength. This is because prestressing only occurs with lexically specified edges of constituents, which is the means of designating the intermediate strength. Additionally, the absence of prestressing suffixes is accounted for by the already explained hole in the paradigm (suffixes not occurring in intermediate strength).

The evidence from the tone/pitch supports the current analysis by making reference to the distinction between lexically specified foot structure and non-lexical foot structure.

References


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33 This is empirically testable, given the small set of relevant suffixes - those that have a lexically specified head of a constituent and that occur word finally.


