Chapter 3
Stress and prosody

3.1 Stress

Stress in Kokota is characterised by considerable variation. Some words with a particular segmental structure may be assigned stress on one pattern, while others with the same structure may be assigned stress on another pattern. A single lexeme may be assigned stress on one pattern by some speakers, and on another by others. This variation occurs even to the extent that a single lexeme may be assigned stress variably by a single speaker. In elicitation of citation forms a single speaker may give a lexeme three times, with two different stress patterns evident.

There are, however, patterns to this variation. The variation results from three factors: irregular stress patterning on some lexemes resulting from the prosodic shadow of lost morphological complexity; the gradual regularisation of these irregularities; and an overall shift in the language's stress regime from moraic trochees to syllabic trochees.

3.1.1 Metrical stress and moraic theory

The following discussion of stress is couched within the framework of metrical theory (see Hayes 1995:26-31 for an introduction), which views stress as a rhythmic structure not as a feature, and moraic theory (Hayes 1995:48-54). This approach has been adopted as it appears to most adequately allow a description of stress assignment in Kokota.

In syllabic stress syllables are assigned to feet of two syllables each. In moraic stress morae are parsed into feet of two morae each. Morae represent units of weight, in which each weight bearing element constitutes one mora. Onsets are not weight bearing units. As it applies to Kokota, each segment of the rhyme is weight bearing. A light syllable has a single mora, while a heavy syllable has two morae - be the rhyme a long vowel, a diphthong, or a single vowel plus a coda (to the extent that codas occur in Kokota).

Feet may be parsed form left to right or from right to left, meaning feet may be aligned with either margin of the prosodic word. Three basic foot types exist: iambs, moraic trochees, and syllabic trochees. An iambic foot has stress assigned to the righthand of the two morae making up the foot (there are no iambs in Kokota). In moraic trochees stress is assigned to the leftmost mora in a foot of two morae, while in syllabic trochees stress is assigned to the leftmost syllable in a foot of two syllables (syllabic trochees are thus not weight sensitive).

3.1.2 Overview of regular stress assignment regime

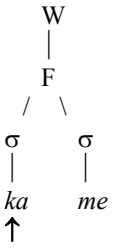
The three crucial features of regular stress assignment in Kokota are that:

- stress is trochaic,
- feet are parsed from left to right, and
- the rightmost foot is head foot.

Feet are parsed from left to right, meaning that feet are aligned with the left margin of the root. Being trochaic, stress is assigned to the trochee or leftmost syllable or mora in each foot.[1] The effect of this is that the first syllable/mora of each root is assigned stress, as is every second subsequent syllable/mora in the word. In roots of two light syllables (ie. syllables of one mora each), both syllables/morae are parsed into a single foot, the leftmost syllable/mora of which is assigned stress, as in *káme* 'hand, arm':

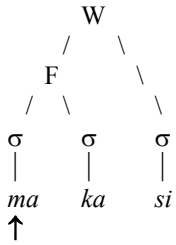
[1] As the language is undergoing a shift from moraic trochees to syllabic trochees, 'trochee' may be assumed for the purposes of this section to refer to either a trochaic syllable or mora.

(3.1)



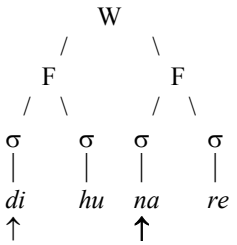
The final syllable/mora in words with an odd number of light syllables is not assigned to a foot. It is thus extrametrical and does not participate in stress assignment. The first and second syllable/mora are parsed into a foot, the third syllable/mora cannot form a complete foot alone, so is not parsed into a foot and does not attract stress. Again the leftmost syllable/mora of the foot is assigned stress, as in *mákasi* 'bonito':

(3.2)



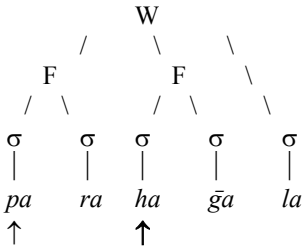
In roots with four syllables/morae the first and second syllable/mora are parsed into one foot, as are the third and fourth syllable/mora. Stress is then assigned to the leftmost syllable/mora in each foot, being the first and third syllable/mora of the root. Where more than one foot exists in a word, the rightmost foot is head foot, meaning that primary stress is assigned to the trochee of that foot. Stress on other stressed syllables/morae is therefore secondary. This means that in roots with four syllables/morae the first syllable/mora carries secondary stress while the third carries primary stress, as in *dìhunáre* 'be rough (of sea)':

(3.3)



Roots with five syllables/morae are assigned stress in exactly the same way as those with four syllables/morae, except that, as with three syllable/mora roots, the final syllable/mora is extrametrical and does not participate in stress assignment, as in *pàraháḡala* 'giant':

(3.4)

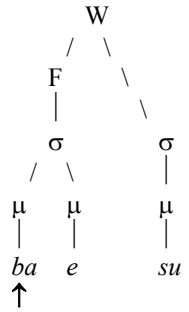


3.1.3 Moraic trochees versus syllabic trochees

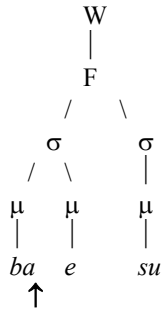
Kokota is currently undergoing a shift in its stress assignment regime from moraic trochees to syllabic trochees. This is not evident in words with only light syllables, as each mora is a syllable, and the effects of syllabic and moraic trochees are identical. In most words with heavy syllables the effects of these two foot types differ and it is thus possible to see which foot type is present. Considerable variation exists in Kokota in this regard. Some roots with one or more heavy syllable are assigned stress on the basis of moraic trochees, and some on the basis of syllabic trochees. The majority of such roots, however, are assigned stress variably, with a strong age distinction apparent: older speakers tend to assign stress on the basis of moraic trochees, while younger speakers tend to assign on the basis of syllabic trochees.

This is apparent in an examination of disyllabic roots consisting of a light syllable followed by a heavy syllable. Roots with the reverse order (one heavy syllable followed by one light syllable) do not display any variation, as the effect is the same, whether the trochees are moraic ((3.5)a.) or syllabic ((3.5)b), here exemplified with *báesu* 'shark':

(3.5) a.

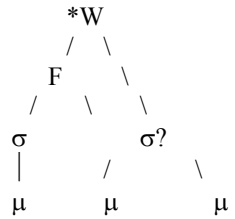


b.



However, roots with a light syllable followed by a heavy syllable display considerable variation. With roots with the segmental structure CVCVV the alignment of feet with the left margin of the word creates problems if moraic trochees apply. With moraic trochees if the first and second morae are assigned to a left aligned foot in a root with a heavy second syllable, a foot boundary occurs between the two morae of the heavy syllable, splitting the syllable. This is impossible - "rules of foot construction may not split syllables" (Hayes 1995:50):

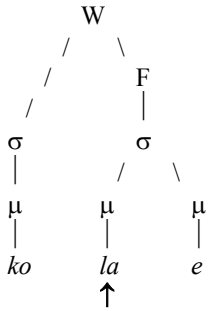
(3.6)



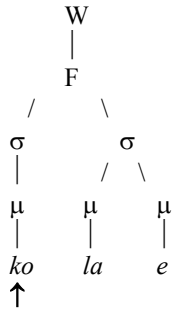
Consequently in this situation moraic trochaic feet must be aligned with the leftmost pair of morae possible without splitting a syllable. The result in roots with one light and one heavy syllable is that the two morae forming the heavy syllable are parsed into a foot, while the first mora remains extrametrical. Stress is then assigned to the second mora, being the leftmost mora of the foot, as with the older speaker's stress assignment for *kolae* 'spear' in (3.7)a.

However, with syllabic trochees no such problem exists. Syllables are parsed into feet with no reference to weight, so a trimoraic disyllable forms a single foot with no extrametrical constituent. Stress is then assigned to the trochee, being the first syllable. The fact that the second syllable is heavy has no impact on the stress assignment. This applies with the younger speaker's stress assignment for *kolae* 'spear', as in (3.7)b.

(3.7) a.



b.

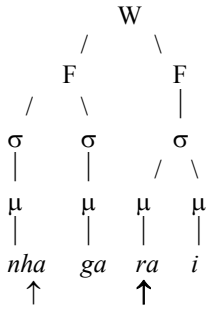


In a representative sample of 21 historically monomorphemic roots consisting of one light followed by one heavy syllable, 2 roots are assigned stress on the light first syllable, 2 are assigned stress on the heavy second syllable, and the remaining 17 are assigned stress variably - on the heavy second syllable by older speakers, and on the light first syllable by younger speakers (as with *kolae* in (3.7)). The relevant data is presented in Appendix 3 section 2.3.

The high proportion assigned stress variably suggests that the language is in mid-change. The stress assignment tendencies of older speakers suggests that the preexisting stress assignment regime involved the moraic trochee, the evidence of younger speakers suggesting that this is in the process of being replaced by the syllabic trochee as the preferred foot type.

This hypothesis is supported by data involving other word types with heavy syllables. Roots of three syllables where the third syllable is heavy also display variation suggesting older speakers are employing moraic trochees while younger speakers are employing syllabic trochees. In a representative sample of 5 monomorphemic roots with this syllable structure, 3 are assigned stress on the basis of moraic trochees. The four morae are parsed into two feet, one foot comprising the light first and second syllables, the second foot comprising the heavy third syllable. Stress is then assigned to the trochees, being the first syllable, and the first mora of the third syllable. The latter is assigned primary stress, being the rightmost stressed mora. Two further roots are assigned stress variably. Older speakers assign stress on the basis of moraic trochees as just described, while younger speakers assign on the basis of syllabic trochees. In this regime the light first and second syllables are parsed into a foot, while the third syllable remains extrametrical - despite being heavy it does not constitute a complete foot as weight is not taken into account in syllabic trochees. This variation is illustrated below for *nhagarai* 'banyan', stressed on the basis of moraic trochees by older speakers (3.8)a., and on the basis of syllabic trochees by younger speakers ((3.8)b.).

(3.8) a.



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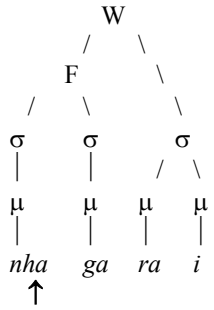
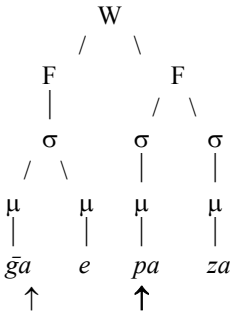


Data on roots with this syllabic structure is presented in Appendix 3 section 2.6.

Similar variation exists with trisyllabic roots where the first syllable is heavy and the second and third syllables are light. However no roots have been identified at this stage where stress is assigned variably. In a representative sample of 9 roots with this segmental structure, 7 are assigned stress on the basis of moraic trochees - secondary stress is assigned to the first syllable and primary stress to the light second syllable, as with *gāàepáza* 'tree sp.' in (3.9)a. In a further 2 roots stress is assigned on the basis of syllabic trochees - stress is assigned only to the first syllable, as with *sáigona* 'evening' in (3.9)b. (the data is presented in Appendix 3 section 2.4).

(3.9) a.



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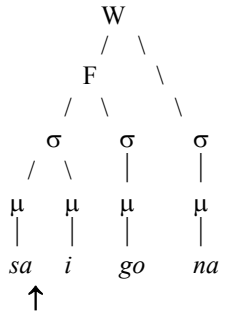
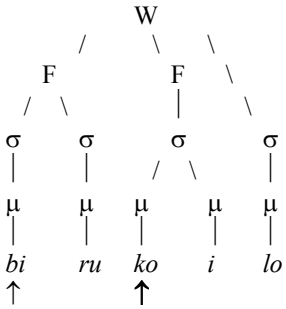
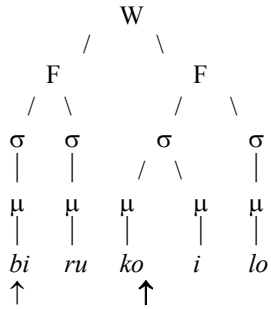


Some longer roots with one heavy syllable, however, resemble disyllables with a heavy first syllable in that they are not able to display evidence of the distinction between moraic and syllabic trochees. Roots of four syllables, the third of which is heavy, carry stress identically with both moraic and syllabic trochaic structures. The root *birukoilo* 'bird sp.' is always assigned secondary stress on the first syllable and primary stress on the third syllable. This assignment would result from stress assignment on the basis of either moraic trochees (3.10)a.) or syllabic trochees ((3.10)b.), consequently it is impossible to determine which regime is operating.

(3.10) a.



b.



3.1.4 Irregular stress assignment in roots with light syllables only

Age based variation also exists with certain roots with three light syllables, however this reflects irregular assignment resulting from the prosodic shadow of lost morphological complexity.

While the regular stress assignment regime described in 3.1.2 will result in stress being assigned to the first of three light syllables, a substantial number of roots with this structure are assigned stress on the second syllable. A representative sample of 243 of the commonest monomorphemic non-loan roots consisting of 3 light syllables are presented in Appendix 3, section 2.1. Of these:

182 (74.9%) are assigned stress on the first syllable.
25 (10.3%) are assigned stress on the second syllable.
36 (14.8%) are assigned stress on the first syllable by some subjects and on the second by others.

These figures alone suggest that stress on the first syllable is more regular. However these raw figures mask further complexity. Some of these roots have an initial syllable /na/, reflecting accretion of the preposed Proto Oceanic article **na*. Unlike many Oceanic languages, Kokota does not retain this form as an article (although a reflex appears to occur within the postposed demonstrative *ana* 'that'). However, **na* does occur as the first syllable of a number of synchronic nouns such as *nakoni* 'person'. A further small number of roots, such as *fahega* 'be happy', possibly reflect accretion of the causative particle *fa*. In addition, a substantial number of roots, such as *fufunu* 'begin', have an initial echo syllable, in most cases reflecting historical reduplication. Roots of three light syllables occur in all of these categories. All are synchronically

monomorphemic (there is, for example, no **koni*, **hega* or **funu*), but reflect historical morphological complexity involving a monosyllabic form attaching to the front of a root of two light syllables.

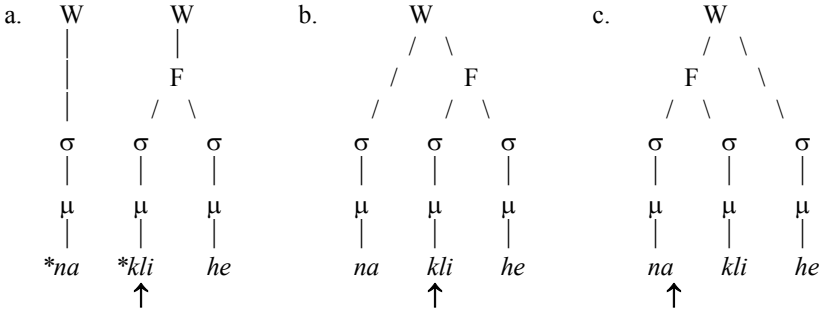
Once the 243 roots mentioned above are divided into these categories the picture becomes clearer:

Table 3.1: Trimoraic trisyllables by historical morphological complexity.

	σ• σ σ	σ σ• σ	variable
roots with possible accreted article	16 (76.2%)	4 (19.0%)	1 (4.8%)
roots with possible accreted causative	3 (75.0%)	1 (25%)	0
roots with initial echo syllable	58 (52.3%)	19 (17.1%)	34 (30.6%)
roots without possible accretion or echo syllable	105 (98.2%)	1 (0.9%)	1 (0.9%)

This categorisation reveals that almost all instances of stress assigned to the second rather than first syllable occurs with roots which are historically morphologically complex. This complexity involves an initial syllable attaching to a former disyllabic root. The stressed syllable thus corresponds to the first syllable of an erstwhile root. Stress assignment on the second of three light syllables thus reflects the prosodic shadow of lost morphological complexity. This is synchronically irregular lexical stress. The large number of forms with this historical complexity which are stressed variably suggest that irregularly stressed roots are in the process of being regularised, a hypothesis supported by the fact that variably stressed roots are assigned stress irregularly by older speakers, and regularly by younger. Where variation between speakers exists, for older speakers the first syllable of the root (the former prefix or accreted particle) is extrametrical, as is synchronically the case with prefixes and proclitics. With synchronic prefixation and procliticisation feet are parsed from the left margin of the root, not the word (as in (3.11)a.). This is also true of irregularly stressed roots - initially feet continue to be parsed from the left margin of the former root, despite its synchronically monomorphemic nature (as in (3.11)b.). Over time younger speakers regularise this by parsing feet from the new left margin of the synchronically monomorphemic root ((3.11)c.). Eventually this regularisation occurs in the speech of all speakers. In the case of the historically polymorphemic forms in Table 3.1, the process of regularisation has yet to begin for some lexemes, it is in mid process for others, and it is complete in yet others.

(3.11)



The stage illustrated by (3.11)b. represents irregular lexical stress resulting form the prosodic shadow of the lost morphological complexity represented in (3.11)a.

3.1.5 The effect of suffixes and enclitics on stress assignment

The presence of suffixes and/or enclitics simply extends the right margin of the word, adding further syllables or morae to the word to participate in stress assignment. Where a root with an even number of syllables or morae is extended by a monosyllabic or monomoraic suffix or enclitic there will be no difference in the way the root is stressed, and no stress will be assigned to the suffix or enclitic, because it remains extrametrical. Thus *hiba* 'eye' alone is assigned stress on the first syllable/mora only. With the

addition of the 1SG possessor enclitic *-ḡu* the stress remains on the first syllable/mora of the root only, as the word is now three syllables/morae in length. The first and second syllables/morae (ie. the root) are parsed into a single foot and the remaining syllable/mora (the enclitic) remains extrametrical. However once a monosyllabic/monomoraic demonstrative, such as *-de* 'these', is also encliticised the word is now four syllables/morae. These are then parsed into two complete feet, both of which are assigned stress on the trochee, giving secondary stress on the first syllable/mora, and primary stress on the third, being the first of the enclitics:

(3.12) *híba* 'eye' → *híbaḡu* 'my eye(s)' → *hìbaḡúde* 'these eyes of mine'

A regularly stressed root of three light syllables will be assigned stress on the first syllable only. However the presence of a single monosyllabic/monomoraic suffix or enclitic will provide the additional syllable/mora to allow parsing into two feet, affecting the assignment of stress - secondary stress will now be assigned to the first syllable/mora, and primary stress to the third, being the last syllable/mora of the root. A further suffix or enclitic will then be extrametrical and not affect stress assignment. In (3.13) the 3PL object enclitic creates a four syllable/mora word, affecting stress assignment. The further presence of the demonstrative enclitic causes no additional affect:

(3.13) *téḡeo* 'thank' → *tèḡeóri* 'thank them' → *tèḡeórire* 'thank those [ones]'

The same situation applies when a trisyllabic trimoraic noun root occurs with possessor and demonstrative enclitics:

(3.14) *fiolo* 'penis' → *fiolóna* 'his penis' → *fiolónana* 'that penis of his'

A similar situation occurs when the clausal tag enclitic *nekeu* (/nekyu/) 'it was thus' accompanies a root of three light syllables. As in (3.13) and (3.14), with the uncliticised root the third syllable is extrametrical and not assigned stress, but with the cliticised root that syllable then becomes the trochee of a second complete foot and thus attracts primary stress:

(3.15) *kókota* 'place name' → *kòkotánekyu* '…Kokota, it was thus'

When a root is assigned stress irregularly, that stress assignment irregularity extends to any words formed by attaching suffixes or enclitics to that root. For example the root *kekredi* 'egg' is assigned stress irregularly on the basis of lost morphological complexity in the form of reduplication (as discussed in 3.1.4). The root is synchronically monomorphemic but has a prosodic structure reflecting a lost morphological structure of a reduplicated disyllabic root **kredi*. Feet are aligned with the left margin of the historical root, not the synchronic root. The addition of two monosyllabic monomoraic suffixes or enclitics creates a five syllable word, but feet alignment remains at the boundary between the first and second syllable of the root. As a result the suffixes or enclitics form a foot and secondary stress is assigned to the second syllable of the word, corresponding to the second syllable of the root, and primary stress is assigned to the first of the two suffixes or enclitics. This is exemplified in (3.16), with the 3PL possessor enclitic and the demonstrative *-re* 'those'.

(3.16) *kekrédi* 'egg' → *kekrèdidíre* 'those eggs of theirs'

In some instances, however, suffixation or encliticisation can trigger regular stress assignment in roots which are stressed irregularly in isolation. Thus for example *duduma* 'pity' is assigned stress irregularly in isolation (like many roots with an initial echo syllable). However when a monomoraic suffix or enclitic is present stress is assigned regularly across the resulting word. In (3.17)a. the enclitic is the 3SG possessor marker *-na*, in (3.17)b. it is the 3SG object enclitic *-i*:

(3.17) a. *dudúma* 'pity' → *dùdumána* 'his/her/its pity'
b. *dudúma* 'pity' → *dùdumái* 'pity him/her/it'

The stress pattern in (3.17)b. is only possible in the regime based on moraic trochees, as while the inflected form in (3.17)a. is now four syllables, the infected form in (3.17)b. remains trisyllabic, the final syllable now being heavy. The inflected form in (3.17)b. therefore has the same prosodic structure shown in (3.8)a. for the moraic trochaic version of *nhagarai*. It is not surprising that suffixation or encliticisation like that in (3.17) should trigger regularisation. The irregularly stressed root consists of three light syllables. In either stress regime one syllable or morae will be extrametrical. While the root's normal stress assignment is irregular, it is not prosodically more complex than a regular structure. However once a further mora is added, this creates the possibility of parsing all morae into feet with no extrametrical mora. A dispreference for extrametrical morae makes the regular parsing into two complete feet much more appealing, triggering the regularisation. This regularisation, however, is not triggered by a suffix or enclitic consisting of a heavy syllable. Thus if *duduma* occurs with the first exclusive plural object enclitic *-gāi* stress assignment remains irregular:

(3.18) *dudúma* 'pity' → *dudùmagāái* 'pity him/her/it'

This remains irregular because stress is assigned to this word on the basis of moraic trochees. In that regime, if feet were parsed regularly from the right margin of the word, the boundary between the second foot and the following word final extrametrical mora would fall in the middle of the heavy final syllable, splitting the syllable. As discussed in 3.1.3 this cannot occur. Consequently regularising the foot parsing margin does not simplify the prosodic structure. Instead it creates new problems, so it does not occur. However, as indicated, this is only so in the regime of moraic trochees.

However, given the variation between moraic trochees and syllabic trochees discussed in 3.1.3, it is not surprising that the effects of suffixes or enclitics which create heavy syllables are varied. In some instances the regime based on moraic trochees applies. Thus for example when *seku* 'tail' carries the 3SG possessor enclitic *-na* the resulting word consists of three light syllables, and stress is assigned only to the initial syllable/mora of the root. When the singular nonvisible demonstrative enclitic *-o* is added, the two enclitics combine to form a single syllable /nao/. The resulting word still consists only of three syllables, however the third syllable is now heavy. This creates a morphologically complex word with the same syllable structure as the root exemplified in (3.8). However stress is normally assigned on the basis of moraic trochees, assigning secondary stress to the light first syllable and primary stress to the heavy third syllable. In other words, the two morae of the heavy syllable are parsed into a foot and assigned stress on the trochee:

(3.19) *séku* 'tail' → *sékuna* 'its tail' → *sèkunáo* 'that (nonvisible) tail of its'

In other instances of the creation of a heavy syllable by the addition of a suffix or enclitic the resulting word is assigned stress on the basis of syllabic trochees. This can occur commonly when a disyllabic bimoraic verb root is accompanied by the 3SG object enclitic *-i* in a situation where the final vowel of the verb combines with the enclitic to form a single heavy syllable. This creates a disyllabic word with an initial light syllable and a heavy second syllable, resembling in syllabic structure the roots exemplified in (3.7). With some roots and for some speakers the resulting word is assigned stress on the basis of syllabic trochees, giving a prosodic structure like that shown for *kolae* in (3.7)b. Both syllables are parsed into a single foot regardless of the fact that the enclitic means the second syllable is now heavy. Stress is then assigned to the first syllable just as it is with the uncliticised root. In (3.20) the final vowel /e/ of *zuke* 'look for' combines with the enclitic to create a heavy syllable with as its nucleus the diphthong /ei/:

(3.20) *zúke* 'look for' → *zúkei* 'look for it/him/her'

The equally common alternative is for such words to occur with stress assigned on the basis of moraic trochees, giving a prosodic structure like that given for *kolae* in (3.7)a.:

(3.21) *zúke* 'look for' → *zukéi* 'look for it/him/her'

The presence of suffixes or enclitics which consist of a heavy syllable tends to affect stress on the basis of moraic trochees. In (3.22)a. *tulufulu* 'thirty' occurs with the cardinal suffix *-gu*. The root consists of four light syllables and is therefore assigned secondary stress on the first syllable (the trochee of the first foot) and primary stress on the third syllable (the trochee of the second foot). When the cardinal suffix occurs being one syllable and one mora it remains extrametrical and the stress assignment is not affected. However when the monosyllabic suffix *-ai* (indicating a number non-final numeral) is present, as in (3.22)b., stress is affected. Although the suffix is monosyllabic it is bimoraic, allowing the parsing of a third foot (in the regime of moraic trochees, but not in the regime of syllabic trochees). The result is that the suffix forms a third foot, which being the head foot, attracts stress on its trochee:

(3.22) a. *tùlufúlu* 'thirty' → *tùlufúlugu* 'thirty (cardinal)'
b. *tùlufúlu* 'thirty' → *tùlufùluái* 'thirty and…'

The same is true of monosyllabic but bimoraic second elements in compounds. The second element in (3.23)b., *au* 'live' combines with the initial purposive marker *mala* to create a four mora word with the same prosodic structure as shown in (3.8)a. for the moraic trochaic version of *nhagarai*, and paralleling the stress assignment in the equivalent but quadrisyllabic compound in (3.23)a.:

(3.23) a. *màlamhóko* 'bench' (lit. 'for sitting')
b. *màlaáu* 'village' (lit. 'for living')

However, as with heavy syllables created by the 3SG object enclitic exemplified in (3.20) and (3.21), variation exists with monosyllabic but bimoraic suffixes and enclitics, where alternative moraic and syllabic trochaic structures are possible. The first exclusive plural possessor enclitic *-mai* when attached to a root of two light syllables creates alternative possible structures. In (3.24)a. the resulting word is assigned stress on the basis of moraic trochees. The two morae of the root are parsed into one foot, and the two morae of the enclitic are parsed into a second root. Stress is then assigned accordingly. In (3.24)b., however, stress is assigned on the basis of syllabic trochees. The two syllables of the root are again parsed into a foot, but the enclitic, being monomoraic, remains extrametrical and no stress is assigned to it.

(3.24) a. *híba* 'eye' → *hìbamái* 'our eyes'
b. *híba* 'eye' → *híbamai* 'our eyes'

Similar variation exists where a root with a heavy syllable is accompanied by a suffix or enclitic, where the heavy syllable of the root creates the possibility for two different stress assignments, depending on whether moraic or syllabic trochees are applying. In some instances one regime is established for the root and that regime is applied to suffixed or encliticised forms of the root. Thus *datau* 'chief', is universally assigned stress on the basis of syllabic trochees. Both syllables are assigned to a single foot ignoring the weight of the second syllable, and then stress is assigned to the trochee, being the first syllable. The prosodic structure thus resembles *kolae* in (3.7)b. When two monosyllabic monomoraic suffixes or enclitics accompany the root, the resulting word is treated as quadrisyllabic for the purposes of stress assignment, not as consisting of five morae. The effect is to create two complete feet and assigning stress to the trochee of each, being the first and third syllables, ignoring the weight of the second syllable:

(3.25) a. *dátau* 'chief' → *dàtaugūna* 'that chief of mine'

However in other instances variation occurs. With a root comprising a single heavy syllable, such as *pau* 'head', stress is normally assigned on the basis of moraic trochees, as this allows for the root to comprise a complete foot. Consequently a single monosyllabic monomoraic suffix or enclitic creates a word consisting of a light first syllable and a heavy second syllable. As illustrated in (3.5), words with this prosodic structure will be assigned stress on the first syllable in both the moraic and the syllabic regimes. However once a further suffix or enclitic is added two possibilities exist - either the resulting word will be assigned stress on the basis of moraic trochees, in which case two complete feet now exist and the first mora of the heavy first syllable is assigned secondary stress and the second syllable is assigned primary stress. The

resulting prosodic structure resembles that applying to trisyllabic roots with a heavy first syllable as exemplified with *oilagi* in (3.9)a., the result being as follows:

(3.26) *páu* 'head' → *páudi* 'their heads' → *pàudíro* 'those heads of theirs'

This is the typical stress assignment for a word like *paudiro*. However a second possibility exists. If the syllabic trochaic regime is applied the resulting word will be given the prosodic structure exemplified for *saigona* in (3.9)b. The first and second syllables are parsed into a single foot regardless of the weight of the first syllable, and stress is assigned to the trochee, being the first syllable. The third syllable is extrametrical and is not assigned stress:

(3.27) *páu* 'head' → *páudi* 'their heads' → *páudiro* 'those heads of theirs'

This is not typical, but it does occur.

3.1.6 The effect of prefixes and proclitics on stress assignment

As feet are parsed from the left margin of the word, the presence of a prefix or proclitic has potentially considerable impact on stress assignment. Morphologically the language is largely left headed, so prefixation and proclitics are rare, being largely limited to reduplication, the causative marker *fa*, and the preposition *ka*.

3.1.6.1 Stress implications of reduplication

The form and function of reduplication is discussed in detail in 2.4. To the extent that reduplication is productive it consists of an initial echo syllable. Where the reduplicated syllable is heavy, it is always reduced in weight by the loss of the second vowel in the sequence (thus *nhau* 'eat' is reduplicated as *nhanhau* 'be biting (of fish)'.

Given that reduplication creates a new left margin one syllable/mora to the left of the word margin in the underived word, it might be expected that the effect on stress patterning would be to cause foot parsing to proceed from the new left margin. However, as discussed 3.1.4, many synchronically monomorphemic roots with an initial echo syllable reflecting historical reduplication retain the prosodic shadow of that lost morphological complexity. The effect is that with many of these roots feet are parsed from the left margin of the former root, not the left margin of the word, resulting in regular stress assignment. This occurs despite the absence in the language of a semantically related unreduplicated cognate. This being so, it is hardly surprising that synchronic reduplication does not automatically cause a shift in foot parsing margin. As with the synchronically monomorphemic roots, there is considerable variation in stress assignment on reduplicated forms for which an unreduplicated cognate does exist.

A representative sample of 63 lexemes is presented in Appendix 3, section 2.1.7, where the lexemes consist of three light syllables, the first of which is an echo syllable and where a semantically related unreduplicated cognate exists. Of these:

31 (49.2%) are assigned stress regularly on the first syllable.
9 (14.3%) are assigned stress irregularly on the second syllable.
23 (36.5%) are assigned stress on the first syllable by some subjects and on the second by others.

As with the synchronically monomorphemic roots, where variation exists it is the older speakers who assign irregularly and the younger who assign regularly. For example:

(3.28) a. *gáto* 'think (TR)' → *gágato* 'think (ITR); thoughts'
b. *túri* 'tell (TR)' → *tutúri* 'tell stories; story'
c. *kere* 'sting (TR)' → *kékere* (younger speakers) ~ *kekére* (older speakers) 'sting (ITR); thorns'

Reduplication derives a new lexeme from an existing lexeme. It appears that once the derived item has entered the lexicon, it becomes eligible for regularisation, a process which then gradually takes place, with some derived lexemes fully regularised, others remaining universally irregular, and others in mid change.

It appears that a reduplicated syllable does not participate in stress assignment per se. Instead it generates a new lexeme which at least initially retains the prosodic structure of the root, from the left margin of which feet are parsed, and an initial non-participating echo syllable. Gradually the prosodic structure of the new lexeme is regularised to parse feet from the left margin of the new word.

3.1.6.2 Stress implications of the causative particle *fa*

The causative form *fa* does not typically participate in stress assignment. Verbs which are causative-marked continue to parse feet from the left margin of the underived root. However, in a small number of causativised verbs stress assignment indicates feet are parsed from the left margin of a word including the causative form. With a number of other causativised verbs stress is assigned variably - with feet sometimes parsed from the left margin of the root, and sometimes from the left margin of the causative form. This appears to reflect lexicalisation in some instances.

Reduplication is functionally idiosyncratic with the derived meaning of each word being unpredictable. By contrast, the presence of the causative particle *fa* is functionally entirely regular. Any verb may occur with *fa*. The semantic effect is to derive a causative verb, and the argument structure is altered to introduce a new agent and reduce the A or S argument of the underived verb to object. This regular semantic and syntactic effect means that it is unlikely that every possible causativised verb is entered separately in the lexicon.

When a causativised verb is not entered in the lexicon the causative form does not participate in stress assignment. It is not clear, however, whether in words of this kind *fa* is a prefix or a preposed particle. One piece of evidence suggesting prefix status is that the form always and only immediately precedes the verb root, and can only apply to that root. It cannot, for example, apply across serialised verbs but applies only to the verb in the sequence that it immediately precedes. If *fa* is a prefix then it simply does not participate in feet parsing in the same way that per se a reduplicated echo syllable does not. Alternatively it may be a preposed particle. This would then make its non-participation in stress assignment unproblematic - it does not participate because it does not belong to the same word. This hypothesis is also supported by the fact that speakers may pause between *fa* and the following root. Furthermore, speakers usually express the view that *fa* is a separate word, and tend to write it as such. Stronger evidence that *fa* is not a prefix lies in the fact that as well as marking verbs it may also mark the possessive base when functioning as a prehead desiderative marker (see 8.5.4.3, example (8.61)). A third possibility is that the form is a preposed particle which optionally cliticises to the verb. Given the limited evidence on this point, I have assumed that *fa* does not form a single word with the verb unless it affects stress assignment. This strikes me as a weaker claim than that *fa* is a regular prefix which does not normally participate in stress assignment. It seems to me a weaker claim to say a morpheme does not combine with others to form a morphologically complex word unless there is direct evidence that it does. As a result of this assumption, I represent *fa* as a separate word unless it participates in stress.

This may be exemplified by most causativised verbs:

(3.29) a. *kráⁿo* 'be dry' → *fa kráⁿo* 'dry s.th.'
b. *káve* 'descend' → *fa káveri* 'lower them, drop them, bring them down'

However, there are instances where *fa* does participate in stress assignment. Some causativised roots are always stressed in a way that indicates *fa* is attached to the beginning of the word. With these words feet are parsed from the left margin of the causative form. A common example is *falehe* 'kill'. Stress assignment indicates that *fa* always forms a single word with the root:

(3.30) a. *léhe* 'die, be dead'→ *fàlehéri* 'kill them'

The presence of secondary stress on *fa* and primary stress on the second syllable of the root clearly indicates single word status. This is presumably the result of a process of lexicalisation. It is not surprising that a form meaning 'kill' should be lexicalised even if morphologically complex (the language contains no other word simply meaning 'kill'[2]). This process is responsible for a number of synchronically monomorphemic lexemes with the initial syllable *fa*. For example *farohi* 'strike with a long thin object - knife blade, stick, forearm etc.' is synchronically monomorphemic - there is no form **rohi*. However the cognate in the neighbouring Maringe language is *rorohi* or *rohi* 'cut, carve into s.th.'.[3] At some point in Kokota the causative particle was accreted and the underived root lost. The difference between *farohi* and *falehe* is thus simply that with *falehe* the underived root has not been lost.

Some other causativised roots appear to be undergoing lexicalisation, with variation in stress assignment indicating that for some speakers *fa* is a preposed particle with these roots, and for others *fa* and the root form a single word. This is the case with the causativised form of *nodo* 'stop, cease', where two stress patterns exist:

(3.31) a. *nódo* 'stop, cease' → *fa nódoi* 'stop him/her/it doing s.th.'
b. *nódo* 'stop, cease' → *fànodói* 'stop him/her/it doing s.th.'

An alternative hypothesis is that the preposed particle optionally cliticises to the root, always doing so with some roots, occasionally with some others, and usually not with a further group. This, however, does not so readily allow the lexicalisation explanation for the variability.

If the hypothesis that *fa* is normally a preposed particle is wrong and it is in fact a prefix which simply does not normally participate in stress assignment, then the lexicalisation hypothesis still holds. Just as reduplicated roots are lexicalised and gradually regularised in their prosodic structure, even if the unreduplicated root remains in the language, so too certain causativised verbs may be lexicalised, resulting in the same gradual regularisation of prosodic structure. This process would presumably be complete for *falehe* but still underway for *fanodo*.

3.1.6.3 Stress implications of the preposition *ka*

While it is a possibility that the causative particle may optionally procliticise, there can be no doubt that the preposition *ka* does so. *Ka* is the only true preposition in Kokota, and its functions are described in 5.1 and 9.6. In form it occurs as an independent particle immediately preceding its complement phrase or clause, or as a proclitic attaching to the first word in the phrase or clause. This optional cliticisation takes place with high frequency in casual speech, but to a lesser extent in careful speech. The distinction is visible in stress assignment. When cliticised, the particle participates in stress assignment - feet are parsed in the resulting word from the left margin of the preposition. Cliticisation to articles is particularly common, giving regularly stressed disyllabic words:

(3.32) a. *ka* + *ia* → *kaia* [kája] 'at theSG'
b. *ka* + *ira* → *kaira* [káiɾa] 'at thePL'

However cliticisation occurs equally freely with nouns if they occur phrase initially:

[2] The language does contain two other verbs coding volitional events resulting in the death of another. One, *faaknu*, means to intentionally kill another person, so has the more specific meaning ‘murder’. The other, *faroho* (and its archaic variant *farogoho*), is used in descriptions of battles and means ‘strike’, usually implying the death of the person struck. However, the resulting death does not seem to be inherent in the semantics of the verb, but an assumed consequence of the blow, as not all those struck in this way die. The verb therefore appears to mean something like ‘strike with a potentially fatal blow’. Consequently I have glossed it ‘smite’. Neither of these more specific verbs therefore express a general notion equivellant to *kill*.

[3] This is from White et al (1988:163), who rather cryptically give an entry for *rorohi*, comment that it is from *rohi*, and then give an example with *rohi*. The entry for *rohi* itself simply says "see **rorohi**"

(3.33) a. *ka + ia + nau + -ḡu* → *káia náuḡu* 'at my house'
b. *ka + nau + -ḡu* → *kánauḡu* 'at my house'

As with participating echo syllables and the causative particle, by aligning feet with the procliticised *ka* the parsing of syllables into feet and consequent stress patterning is altered. In (3.33)b. this simply means the second of the three syllables, the former stressed first syllable of the root, is not stressed, now being the rightmost of the two syllables in the left aligned foot. The new third syllable is extrametrical and so remains unstressed . However in longer words additional syllables may be parsed into feet and assigned stress, for example when a demonstrative enclitic is present:

(3.34) *ka + suli + are* → *kàsuliáre* [kàsuljáre] 'at those children'

The host for cliticisation is not limited to nominals or nominal modifiers. *Ka* may be cliticised to whatever form occurs initially in the complement constituent. Where the complement is a clause rather than a phrase *ka* is cliticised to the first word of the phrase, for example a modal auxiliary (in this example it is *n-e-ke* RL-3-PRF):

(3.35) ka + *neke* → *káneke* 'at where they did…'

It is a possibility that rather than optionally cliticising, *ka* only occurs as a proclitic. This seems implausible, however. It would require that it may or may not participate in stress assignment, without any apparent parameters beyond careful versus casual speech. The fact that the form freely occurs before words of any type as long as they happen to fall at the beginning of the complement phrase effectively rules out lexicalisation to explain the participation in stress assignment (it is surely implausible to suggest a lexicalised locative form of 'child'). The only plausible explanation for its optional participation in stress assignment is the optional nature of its cliticisation.

3.1.6.4 Stress implications of the subordinator *ta*

The subordinating particle *ta* optionally procliticises to words with the initial vowel /a/. This cliticisation always results in the loss of one of the identical vowels. The cliticised form therefore simply adds the onset /t/ to the initial syllable of the host word. This therefore has no effect on weight or feet parsing, and consequently has no effect on stress assignment.

3.2 Prosodic processes

A number of phonological processes occur in Kokota which reduce prosodic complexity by reducing the number of morae and syllables in words. These processes include widespread vowel syncope with the effects of the generation of surface clusters, codas and geminates; the formation of surface diphthongs, and the formation of glides from non-low vowels.

3.2.1 Word final vowel syncope

3.2.1.1 Word final syncope before consonants

Word final vowels syncopate in casual speech in a number of environments. This occurs when the following word has as its initial segment a consonant belonging to the same place of articulation class as the consonant preceding the vowel. Thus in /taɾemedi tilo mane/ 'with three men' the final vowel of the first word syncopates bringing together the homorganic plosives /d/ and /t/ (as in (3.36)a.). This is not limited to plosives but may involve segments with any manner of articulation, including (but not limited to) a fricative and a plosive ((3.36)b.), a nasal and a fricative ((3.36)c.), and two nasals ((3.36)d.).

(3.36) a. /taɾemedi tilo/ → [taɾemed tilo] 'with three…'
b. /gazu tauna/ → [gaz tauna] 'that tree'
c. /mane suaɾaɣi/ → [man suaɾaɣi] '[the] man Suaragi'
d. /fani nogu/ → [fan nogu] 'used to be mine'

While this occurs most commonly with coronals, it is not limited to that place class, as (3.37) illustrates:

(3.37) /siaɣe ga/ → [siaɣ ga] 'and then I…'

While this process is widespread in casual speech, it occurs particularly commonly with some high frequency lexical items. *Mane* 'man' (which is not a loan word) frequently occurs in a reduced form. Object indexed auxiliaries also commonly reduce:

(3.38) /eni naŋanana/ → [en naŋanna] 'did that name' (i.e. 'was called')

The reverse is also true. Final vowel deletion is particularly common before the subordinating particle *ta*, for example:

(3.39) /nakoni ta mai/ → [nakon ta mai] 'people who come' (i.e. 'visitors')

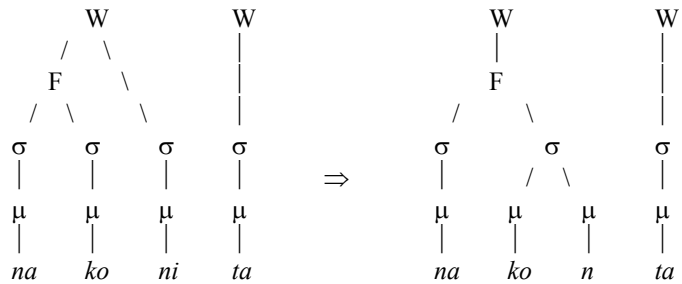
This reflects an important syntactic constraint - the word undergoing final vowel deletion and the following word must belong to the same constituent. The process in fact most commonly affects a head which is immediately followed by a modifier of some kind (hence the frequency of occurrence in nouns preceding a relative clause, as in (3.39)). It is in this construction that final vowel deletion is occasionally found between non-homorganic consonants:

(3.40) /koṃu ta maina/ → [koṃ ta maina] 'the year that comes' (i.e. 'next year')

The examples in (3.39) and (3.40) are set phrases, and many of the most common occurrences of this process are in frequent collocations. It is, however, not limited to such phrases.

The prosodic effect of this process is to reduce by one the number of syllables in the affected word, however the number of morae does not change, as the onset of the syllable which has been lost due to vowel deletion becomes the coda of the preceding syllable. The only codas found in the language are surface codas generated by vowel deletion. The prosodic change is:

(3.41)



3.2.1.2 Word final syncope before vowels

Kokota displays widespread word final vowel syncope when the following word is vowel initial. This usually occurs when the two vowels are identical. Although only a small number of words have no word initial onset, several of those that do are among the highest frequency words in the language, including the articles *ia* and *ira*, the pronouns *ara* '1SG' and *ago* '2SG', and the locative *ade* 'here'.

Verb complexes with a transitive predicate often have as their final element the 3SG object enclitic *-i~-ni* or 3PL object enclitic *-di~-ri*. As a result there are frequent collocations of an /i/ final object enclitic and a noun phrase with an /i/ initial article. This creates the environment for deletion of one of the identical vowels:

(3.42) a. /fɾiŋeni ia/ → [fɾiŋe nia] 'make/do it the…'
b. /dudumadi iɾa/ → [dudumadiɾa] 'feel sorry for the…'

This collocation is common and in normal casual speech always results in the deletion of one vowel.

Equally commonly, the final element of a verb phrase may be a modal or aspectual particle, many of which have the final vowel /a/.[4] Consequently there are frequent collocations of these enclitics and the /a/ initial pronouns or *ade*. Again this collocation is common, and again in normal casual speech the result is the deletion of one of the identical adjacent vowels:

(3.43) a. /a tuɾinina aɾa/ → [a tuɾininaɾa] 'I will tell it'
b. /ɡeuŋa aɣo/ → [ɡeuŋaɣo] '"…" You said.'
c. /ta au la ade/ → [ta au lade] 'if [he] is here'

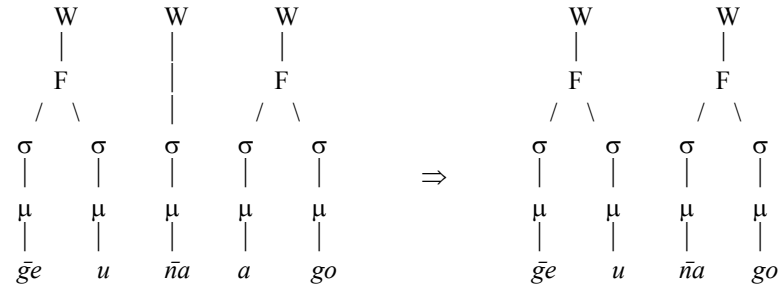
This verb complex final environment is the most common locus of the phenomenon, however it is not limited to this environment. In (3.44) the existential verb *au* is collocated with an /a/ final auxiliary with the same effect:

(3.44) /da auɣu/ → [dauɣu] 'weINC are/were staying'

Any collocation of a vowel initial word and a preceding word with an identical vowel as its final segment is eligible for this process. Unlike the interconsonantal syncope discussed in 3.2.1.1, this is not limited to members of a single constituent, as the verb complex plus subject environments of the first two examples in (3.43) demonstrate.

The prosodic effect of this process is to not only reduce by one the number of syllables by deleting the word final syllable, but also reducing the number of morae. Again the syncope deletes a nucleus, leaving the former onset of that syllable unattached. However now the initial vowel of the following word provides a replacement nucleus, the particle and the following word thus combine to form a single phonological word:

(3.45)



3.2.2 Vowel syncope in compounds

The behaviour of identical adjacent vowels between compounded elements is the same as that between independent words. Thus a vowel initial second element will trigger the deletion of an identical final vowel of the preceding element:

[4] These include the immediate marker *ŋa*, the conditional marker *la*, the limiter *bla* and the initial marker *fea*.

(3.46) /mala-au/ → [malau] 'inhabitable place' (purposive marker + existential verb)

3.2.3 Vowel syncope and cliticisation

3.2.3.1 Syncope with enclitics

Widespread syncope occurs with vowel initial enclitics. There are two classes of such enclitics which occur with high frequency: demonstratives and the irrealis tag clause *eu* 'it is thus'.

Cliticisation of the tag *eu* triggers vowel syncope when the host word has a front vowel in final position, be it /e/ or /i/:

(3.47) a. /ŋeŋe eu/ → [ŋeŋeu] '…is different, it's like that.' (*nheñhe* 'be separate')
b. /saɾe eu/ → [saɾeu] '…there, it's like that.' (*sare* 'there')
c. /nai eu/ → [naiu] '…put it, it's like that.' (*nai* 'put')
d. /manei eu/ → [maneiu] '…him, it's like that.' (*manei* 'he/she/it')

Four demonstratives optionally cliticise.[5] Once cliticised, syncope is obligatory. Syncope in this environment appears to not be an optional surface process but to be morphophonemic. All four (*ine* 'thisR', *ide* 'theseR', *ana* 'thatN' and *are* 'thoseN') have an initial vowel followed by a consonant. All delete the initial vowel regardless of the identity of the preceding vowel:

(3.48) a. /kamegu ine/ → [kamegune] 'this hand of mine'
b. /mane ide/ → [manede] 'these men'
c. /mau ana/ → [mauna] 'that taro'
d. /meɾeseni aɾe/ → [meɾeseniɾe] 'those medicines'

The prosodic effect of vowel syncope with both tag and demonstrative enclitics is to reduce the enclitic to a single mora, thus reducing the overall syllabic and moraic complexity of the surface word.

3.2.3.2 Syncope with proclitics

Two preposed particles optionally cliticise: the subordinator *ta* and the preposition *ka*.

The subordinator *ta* optionally cliticises to the existential verb *au*, with syncope of one of the identical adjacent vowels:

(3.49) /ta au la/ → [tau la] 'if there is…'[6]

It is not clear at this stage whether this may also occur with other /a/ initial verbs.

Cliticisation of *ta* and *au* occurs as the standard surface form in formulaic demonstrative clauses. These demonstrative clauses frequently also reflect demonstrative cliticisation with its commensurate syncope:[7]

(3.50) a. /mane ta au ana/ → [mane tauna] 'the man who is that one' (i.e. 'that man')
b. /suga ta au ide/ → [suga taude] 'the houses that are these ones' (i.e. 'these houses')

The preposition *ka* optionally cliticises to the first word of the constituent to which it is head (as discussed in 3.1.6.3). Where the initial segment of the host word is /a/ vowel syncope of one of the adjacent identical vowels occurs. This happens very frequently with the first and second person singular pronouns *ara* and *ago*, to the extent that the non-cliticised, non-syncopated forms are heard only in careful speech:

[5] See 4.1.3 for a discussion of which demonstratives may cliticise.
[6] The particle *la* marks conditional mood.
[7] For a discussion of clausal demonstratives see 4.1.3.3.

(3.51) a. /ka aɾa/ → [kaɾa] 'at me'
b. /ka aɣo/ → [kaɣo] 'at you'

Again, the prosodic effect of this encliticisation and syncope is to reduce by one the number both of morae and syllables in the surface form.

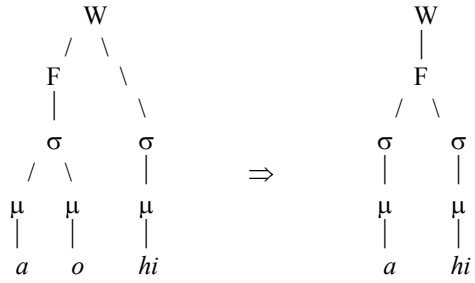
3.2.4 Suffixed demonstrative vowel syncope

Demonstratives typically undergo syncope of the final vowel when one of a set of suffixes is attached. Demonstratives frequently occur with one of a number of pragmatic and modal suffixes, most commonly the limiter *-blau*, emphatic *-hi*, and specifier *-lau*. When followed by one of these suffixes the unstressed final vowel of the demonstrative typically syncopates in normal casual speech:

(3.52) a. /aohi/ → [ahi] 'this!'
b. /iaohi/ → [jahi] 'that!'
c. /anablau/ → [anblau] 'just that'
d. /aɾelau/ → [aɾlau] 'those ones'
e. /analau/ → [anlau] 'that one'[8]

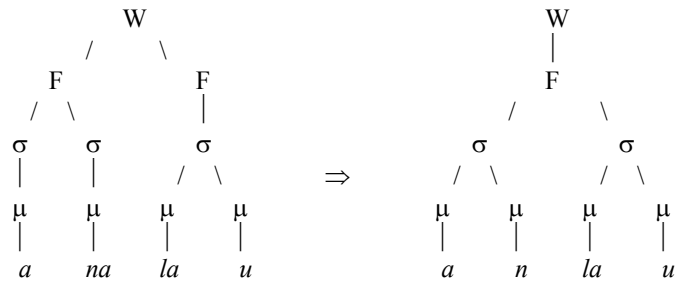
In this situation there is no restriction on the consonants which may be brought together by this syncope, as all demonstrative suffixes trigger the process. As with word final syncope, the process has the effect of reducing the number of morae by one when the syncopated vowel is preceded by a vowel, as in (3.52)a. and b. However, unlike word final syncope, in (3.52)a. and b. the syncopated vowel is the second vowel of a diphthong sequence. Here the effect is diphthong reduction, so while the number of morae is reduced by one, the number of syllables remains the same:

(3.53)



Conversely, as with word final syncope, when the syncopated vowel represents a separate syllable with its own onset, syllable number is reduced by one, but the number of morae remains the same, the onset of the syncopated syllable becoming the coda of the preceding syllable:

(3.54)



Reduced forms such as this are assigned stress on the basis of syllabic trochees. Thus the reduced form in (3.54) is assigned stress on the first syllable only, although both syllables are heavy.

[8] The exact semantic distinctions between these demonstratives are described in 4.1.3.

3.2.5 Word internal syncope between non-identical consonants

Vowel syncope occurs word internally between homorganic consonants. This is very widespread between identical consonants. However it also occurs occasionally between non-identical homorganic consonants, particularly in high frequency items.

Between non-identical homorganic consonants the vowel of an unstressed syllable may syncopate, apparently without restrictions based on features other than place class:

(3.55) a. /salenaboko/ → [salnaboko] 'place name'
b. /banesokeo/ → [bansokeo] 'place name'
c. /vaɾedake/ → [vaɾdake] 'twenty'
d. /fa lehe ŋaunau/ → [fa lehŋaunau] 'make me hungry'
e. /mane-dou/ → [mandou] 'big man'

In (3.55) consonants with a range of voicing and manner features are brought together as a result of vowel syncope. Interestingly, the collocation of /h/ and /ŋ/ in (3.55)d. provides evidence of the status of [-labial, -coronal] as a broad place class in Kokota (discussed in 2.1). The restriction by place classes is demonstrated by the behaviour of numerals with the suffix *salai*, indicating multiples of ten:

(3.56) a. /fitusalai/ → [fitsalai] 'seventy'
b. /hanasalai/ → [hansalai] 'eighty'
c. /n̥evasalai/ → *[n̥evsalai] 'ninety'

In (3.56)a. and b. syncope occurs between the homorganic final syllable onset of the numeral and the initial consonant of the suffix. In (3.56)c. this is blocked by the fact that the relevant consonants belong to separate place classes.

As with word final and demonstrative final syncope, interconsonantal syncope reduces syllable numbers by one but does not reduce morae number as the onset of the syncopated syllable becomes the coda of the preceding syllable.

3.2.6 Geminate consonant formation

Vowel syncope of unstressed vowels between identical consonants is very widespread in normal casual speech, and results in the formation of geminates. This typically occurs in a number of high frequency collocations, and frequently occurs in reduplication, and with some suffixes and enclitics.

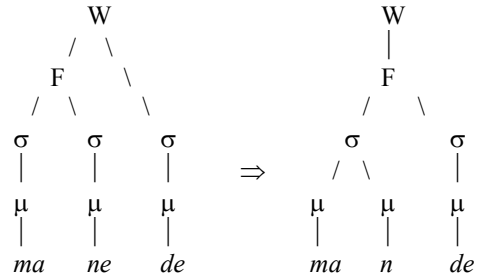
3.2.6.1 Geminates in suffixes and enclitics

The presence of one or more suffixes or enclitics may create an environment in which vowel syncope may occur. This may occur when a cliticised demonstrative occurs with a root where the onset of the final syllable of the root is homorganic with the initial consonant of the enclitic. For example when *mane* 'man' carries the demonstrative enclitic *-de* 'this', the vowel of the second syllable becomes eligible for syncope:

(3.57) /mane-de/ → [mande] 'this man'

Here the cliticised word has three light syllables, the first and second of which are parsed into a single foot, the third syllable remaining extrametrical. Consequently only the first syllable is stressed. The vowel of the second syllable is unstressed and occurs between the homorganic /n/ and /d/. It is therefore eligible for syncope. The mora of the lost syllable then transfers to the former onset of that syllable, which becomes the coda of the preceding syllable. The prosodic effect of this is to simplify the prosodic structure of the word by removing the extrametrical syllable and reducing the word to a single complete syllabic trochaic foot:

(3.58)



A number of the most commonly occurring enclitics have identical initial consonants. These include the 3SG possessor indexing marker *-na*, and the 3SG object enclitic, one allomorph of which is *-ni*. The cliticised demonstrative *-na* 'that (nearby)' also commonly occurs. Consequently the sequences /na-na/ '3SGP-thatN', and /ni-na/ '3SGO-thatN' are common. Where the first syllable in each sequence is not stressed, the vowel may syncopate, leaving a geminate consonant. In (3.59) a trisyllabic noun root is marked with the 3SG possessor marker and the demonstrative. Stress is assigned regularly, leaving both enclitics unstressed, the first because it is not a trochee, and the second because it is extrametrical. As the first is not stressed, the vowel may syncopate, leaving a geminate:

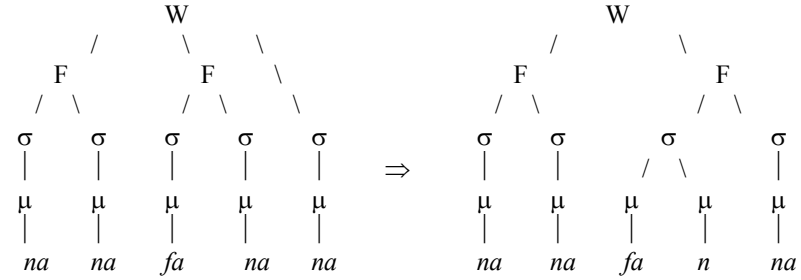
(3.59) /nanafa-na-na/ → [nànafánna] 'that heart of his/hers/its'

The same process occurs in (3.60) when the sequence /nina/ is cliticised to a regularly stressed trisyllabic verb root:

(3.60) /tavihi-ni-na/ → [tàvihínna] 'hunt that'

The result of this syncope is that the number of syllables in the word is reduced by one. However the number of morae remains the same. The mora associated with the syncopated vowel is transferred to the consonant that was formerly the onset of the reduced syllable. That consonant then becomes the coda of the preceding syllable:

(3.62)



Again stress is assigned on the basis of syllabic trochees. The syncope and consequent coda formation simplifies the prosodic structure of the complex word by removing the extrametrical syllable and reducing the word to two complete feet. Primary stress has been assigned to the third syllable of the root, being the trochee of the rightmost foot. The onset of the reduced syllable becomes part of that third syllable, and the former extrametrical syllable becomes the unstressed syllable of the rightmost foot.

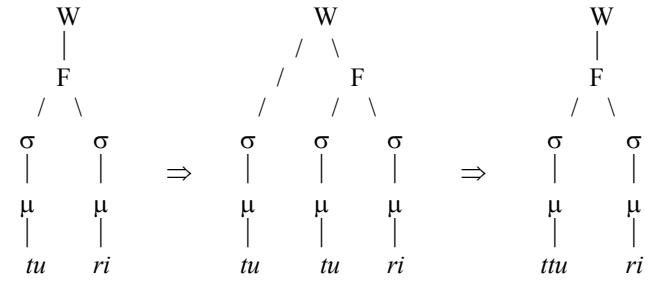
3.2.6.2 Geminates in synchronic reduplication

The most common locus of geminate formation is in reduplication. Apart from a small number of lexemes displaying historical full reduplication (discussed in 2.4), reduplication involves an echo syllable identical to the initial syllable of the reduplicated root. To the extent that reduplication is synchronic, only this partial reduplication occurs. Thus *turi* 'tell (TR)' is reduplicated as *tuturi* 'tell stories, chat; a story'. However a restriction applies where the onset of the reduplicated syllable is a consonant cluster. In this situation the C2

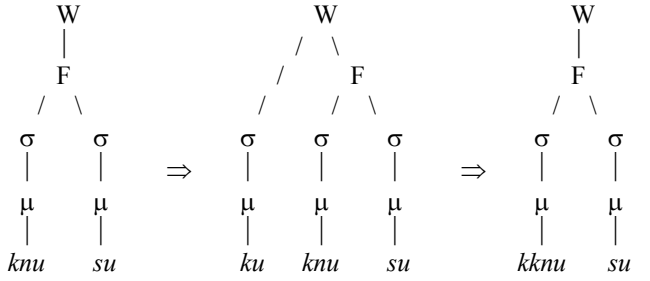
of the onset of the reduplicated syllable is deleted on the surface. For example *knusu* 'break (ITR)' is reduplicated as *kuknusu* 'a broken piece of s.th.'.[9]

Consequently, whether the unreduplicated first syllable onset is a cluster or not, reduplication creates a situation in which a vowel is flanked by two identical consonants. In addition, until a process of regularisation moves the foot boundary to the left margin of the echo syllable, the echo syllable is extrametrical and thus unstressed.[10] This is precisely the environment in which vowel syncope normally occurs in Kokota, and in casual speech reduplicated syllables typically appear on the surface as geminates. However, unlike geminates resulting from suffixation or encliticisation, reduplicative geminates are word initial. Consequently the former onset of the reduced syllable cannot be reanalysed as the coda of the preceding syllable. A reduplicative geminate therefore adds a segment to the onset of the subsequent syllable:

(3.62) a.



b.



Again the effect is to simplify the prosodic structure of the reduplicated words by removing an extrametrical syllable. In this case the effect is also one of regularisation by removing an extrametrical syllable which is irregularly to the left of the complete foot, rather than to the right of it.

3.2.6.3 Geminates in non-synchronic reduplication

As discussed in 3.1.4, numerous Kokota roots have identical first and second syllables, without a corresponding semantically related unreduplicated root existing in the language. For example *fufunu* 'begin' has no corresponding **funu*. Almost all such roots reflect historical reduplication, and although no unreduplicated cognate exists, many such lexemes are stressed irregularly reflecting the prosodic shadow of the lost morphological complexity.

As with synchronic reduplication, the vowel of the initial syllable is flanked by two identical consonants, and again vowel syncope is common. For example:

[9] See 2.4.1.2 for a discussion of this C2 deletion.
[10] See 3.1.6.1 for the prosodic effects of reduplication and the regularisation of irregular prosodic structure in reduplicated lexemes.

(3.63) a. /fufunu/ → [ffunu] 'begin'
b. /huhuɾaŋi/ → [hhuɾaŋi] 'place name'
c. /titili/ → [ttili] 'tabu stone circle'
d. /m̥um̥ui/ → [m̥m̥ui] 'be wet'

The prosodic implications of this are the same as for synchronic reduplication.

3.2.7 Compensatory lengthening

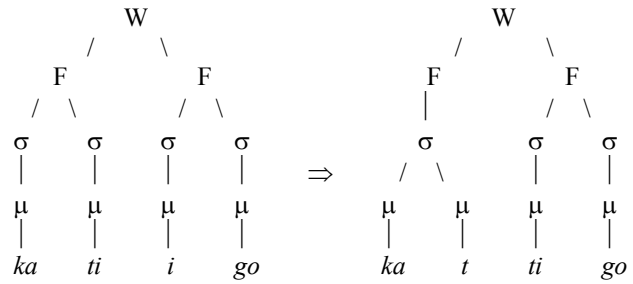
In some instances geminates are created, not by two identical consonants brought together as a result of vowel syncope, but by a single consonant lengthening to compensate for a mora lost through syncope. What makes this process remarkable is that the geminate compensates to the right to replace the mora of a vowel following the consonant which becomes geminate.

This may occur when a root final vowel has syncopated before an object enclitic with an identical initial vowel:

(3.64) a. /kati-iɣo/ → [kàttíɣo] 'bite you'
b. /huhi-iɣo/ → [hùhhíɣo] 'ask you'
c. /tufa-au/ → [tùffáu] 'give me'

Here the final vowel of the root syncopates in the environment of the identical following vowel. The former onset of the reduced syllable attracts the mora of the lost syllable and becomes the coda of the preceding syllable. The right compensating consonant then becomes the onset of the second syllable. This has the prosodic effect of allowing a reduction in the number of syllables, while retaining two complete feet (in this case moraic):

(3.65)



3.2.8 Reduction of diphthong weight by V2 deletion

Two processes reduce prosodic complexity by reducing the weight of diphthong nuclei. Consisting of a sequence of two vowels, these nuclei are bimoraic, and such syllables are heavy. Two processes reduce this weight to one mora, one by deleting the second of the two vowels, the other by coalescing the features of both vowels into a single vowel.

Monosyllabic roots which have as their nucleus a diphthong occur in casual speech in reduced form in which the second vowel is deleted when a single monomoraic suffix or enclitic is present. This reduces the heavy syllable to a light syllable, creating a bimoraic disyllabic word. This simplifies the prosodic structure of the word by allowing for a single complete moraic foot.

(3.66) a. /ŋau-di/ → [ŋadi] 'eat them'
b. /lao-bo/ → [labo] 'go ahead!'[11]

[11] It is interesting to note that while speakers routinely produce these reduced variants in casual speech, when tested they are regarded as being acceptable but not good Kokota.

3.2.9 Vowel coalescence

Diphthongs may also be reduced by a process of vowel coalescence. Features of the two vowels in the VV sequence coalesce to form a single monophthong which is produced in a position intermediate between the positions of the two vowels in the original sequence. This is most evident with low + high sequences. The resulting monophthong is the mid vowel with the same front/back features as the high vowel. Thus /au/ is reduced as /o/ and /ai/ is reduced as /e/:

(3.67) a. /vilai/ → [vile] 'knife'
b. /bula-nau/ → [bulano] 'I'm angry'

This process also applies to sequences of mid + high vowels, the resulting monophthong being in an intermediate position between the two vowel positions. Thus *manei* 'he, him', for example, typically occurs with a monophthong which is intermediate between the mid front and high front vowel positions, equivalent to a reduced height variant of /i/.

Coalescence is, however, not limited to the reduction of diphthongs, but may occur across morpheme boundaries with other VV sequences in high frequency collocations. A collocation of /u/ and /a/ for example may occur on the surface as [ɔ]:

(3.68) /kame-mu ana/ → [kamemɔna] 'that hand/arm of his/hers/its'

This has the effect of reducing the word to four light syllables, allowing the parsing of syllables/morae into two complete feet.

3.2.10 Glide formation

As discussed in 2.1.3.4, Kokota has no underlying glides. However, as discussed in 2.2.4.3, non-low vowels form glides in certain environments - the front non-low vowels /e/ and /i/ becoming the palatal glide [j], the non-low back vowels /o/ and /u/ the labiovelar [w]. As discussed in 2.2.4.1, diphthong formation reduces syllable number by combining a sequence of two vowels into a single heavy syllable. However, diphthong formation only occurs with certain VV sequences. Other VV sequences also undergo a process which reduces not only syllable number, but also morae number, by changing one of the vowels into a glide.

This process of glide formation only affects the first vowel in a VV sequence, turning that vowel into an onset consonant. One environment where this occurs is where it will create an onset for a syllable that would otherwise be onsetless. In a sequence of three vowels if the middle vowel is eligible for glide formation that will take place. For example the clausal tag *nekeuo* 'that was thus' is quadrisyllabic in slow careful speech, each vowel realised as a separate syllable. However, the middle vowel in the VVV sequence is eligible for glide formation. This occurs, creating a word which has only three syllables (and morae), the /u/ becoming a glide onset for the /o/:

(3.69) /ne-ke-u-o/ → [nekewo] 'that was thus'

The vowel /e/ in that sequence is also eligible for glide formation in some circumstances. If that vowel underwent glide formation instead of the /u/ the resulting word would be *[nekjuo], which is trisyllabic. However this involves the acceptable, but not preferred, syllable structure CV CCV V. Instead the preferred structure CV CV CV is generated.

A similar situation pertains in (3.70). Unlike the underlying form in (3.69), the first and second vowel in the VVV(V) sequence are eligible for diphthong formation. However, the diphthong is not formed. Instead of forming a diphthong with the preceding vowel, the middle vowel forms the onset of a syllable containing the following vowel(s):

(3.70) a. /gauai/ → [gawai] 'be distant'
b. /koṃ̥u ta mai ana/ → [koṃ̥u ta mayana] 'that week that is coming' (ie. 'next week')

The fact that the vowel which undergoes glide formation would also be eligible for diphthong formation if it did not also immediately precede a vowel means that the effect of glide formation in this situation does not reduce syllable numbers. It does however reduce morae numbers. As with (3.69), it also creates a sequence of two syllables each with an onset, the first of which is light, rather than a dispreferred sequence of two syllables, the second of which has no onset and the first of which is heavy.

It can be seen from this that the structure CV-CV is preferred to CVV-V. The evidence of (3.70) reveals that diphthong formation occurs after glide formation.

It will be noted that the surface form of *gauai* [gawai] consists of a light followed by a heavy syllable. Words with this structure are the locus of considerable variation, as discussed in 3.1.3. This variation, reflecting a shift from moraic trochees to syllabic trochees, is seen in this surface form, with the syllabic stress assignment [gáwai] and the moraic [gawái] both occurring, with younger speakers tending to use the former and older speakers the latter. As this occurs in a surface form after another phonological process has modified the prosodic structure, it suggests that both moraic and syllabic trochees are operating synchronically.

However, glide onset formation is not limited to the second vowel in a VVV(V) sequence. The first vowel in a VV sequence can undergo glide formation, even if an onset is already present, creating an onset cluster

(3.71) a. /n-e-ke-u/ → [nekju] 'it was thus'
b. /ikoa/ → [ikwa] 'be small'

This reduces the number of morae and syllables, simplifying the prosodic structure from one complete foot plus an extrametrical syllable/mora into the preferred root shape of a single foot consisting of two light syllables. The resulting onset clusters in (3.71) conform to the language's constraints on underlying clusters described in 2.3.1.2, broadly that C1 must be an obstruent and C2 a voiced sonorant. However, there is no restriction that a C1 in a cluster resulting from glide formation conform to those constraints. Glide formation freely occurs where the resulting cluster C1 is a sonorant, as (3.72) illustrates.

(3.72) /pɾepɾeku-mu-aɾe/ → [pepɾekumwaɾe] 'those lips of yours'[12]

Glide formation generating a surface cluster may occur only when the existing onset consists of a single consonant. A constraint exists in the language on onset clusters of more than two consonants. This prevents glide formation where the glide would add a third consonant to a syllable onset.

Stress assignment occurs after glide formation, as (3.71)b. and (3.72) illustrate. When produced in slow careful speech *ikoa* is realised as a trisyllable, with stress assigned irregularly to the second syllable vowel /o/. However it is this vowel which undergoes glide formation, creating a disyllabic word which is assigned stress on the first syllable, both syllables being parsed into a single foot, resulting in the stress assignment [íkwa].

In isolation *pepreku* is also irregularly stressed on the second syllable. In this case the second and third syllables (/pɾeku/) are parsed into one foot (the first syllable being extrametrical). With the addition of the enclitics *-mu* and *-are* the fourth and fifth syllables (/mu-a/) would normally be parsed into a second foot. The remaining syllable [ɾe] would be extrametrical. Primary stress would then be assigned to the trochee of the rightmost foot, being the syllable /mu/. However it is the vowel of this syllable which undergoes glide formation. In the surface word the second and third syllables remain parsed into a foot. The third and fourth

[12] It will be noted that the sequence of *-mu* plus a demonstrative with the initial segment /a/ here undergoes glide onset formation, the segments /ua/ occurring on the surface as [wa]. However in 3.2.9 (example (3.68)) a phonologically and morphological similar sequence underwent vowel coalescence (/ua/ occurring on the surface as [ɔ]). No basis for determining choice of these rival strategies has been identified.

syllables are also parsed into a foot, but the third and fourth syllables are now [mwaɾe]. Consequently primary stress is assigned to [mwa], no word final extrametrical syllable now occurring. Stress assignment is thus [peprèkumwáɾe].

While glide onset formation occurs widely, word minimality constraints prevent glide formation if the resulting word would consist only of a single light syllable. For example the first vowel in *kue* 'grandfather' is eligible for glide formation, generating a cluster onset like that in (3.71)b. However when the word occurs without any affixes or clitics this may not occur as it would generate a word consisting of a single light syllable. Word minimality constraints preclude stress bearing words of less than two morae. Glide formation is thus blocked in that environment. However if an enclitic is present glide formation does not violate that constraint and so takes place:

(3.73) a. /kue/ → [kúe] 'grandfather' (not *[kwe])
b. /kue-gu/ → [kwégu] 'my grandfather'

In summary, glide onset formation occurs when a non-low vowel precedes another vowel, except when it will generate an onset of more that two consonants or a subminimal word. It occurs before either diphthong formation or stress assignment.