Linear Order in Mee Vowel Coalescence

Constraints on the directionality of spreading

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April 15, 2018

Modul: 04-046-2015, Phonologie: Segmentale Phonologie

Seminar: The Phonology of Vowels (Jochen Trommer)

Abstract

This term paper presents a counterexample to the idea that linear order cannot play a role in vowel hiatus resolution. Casali (1996, 1997) proposes an OT account, where preservation can only target morphosyntactically or prosodically prominent positions. Data from compounds, reduplication and suffixation in Mee (Trans-New-Guinea; Papua, Indonesia) show that the rounding of the first vowel is always preserved, regardless of the morphosyntactic context. I argue that this can be derived by employing *SpreadR/L constraints making crucial reference to linearity in spreading using autosegmental representations in an OT approach.

1 Introduction

Linearity has been a matter of debate in generative phonology since the advent of Optimality Theory (Prince & Smolensky 1993). The earlier rule-based approaches, e.g. SPE (Chomsky & Halle 1968) and autosegmental phonology (Goldsmith 1976) could easily make reference to linear order by specifying a certain context as occuring to the left or to the right of the target. This proved difficult in Optimality Theory, because the focus shifted from description to explanations. The generalized alignment scheme (McCarthy & Prince 1993) provided an approach to directionality by making reference to the edges of certain prosodic and morphological constituents. This approach was however quickly criticized for introducing complex constraint types and making reference to specific morphological information (i.a. McCarthy 2003).

Other proponents of Optimality Theory have denied that linearity should play an explicit role in constraint formulation. This is true for Casali (1996, 1997) as well as for positional faithfulness approaches (Beckman 1998). Linearity is said to be epiphenomal, resulting from the interacting reference to prosodically and morphosyntactically prominent positions. This is exactly the approach I will be arguing against.

Linear order in vowel coalescence poses a special challenge to parallel optimality theory. The two vowels, that are in an order relation in the input, do not fully surface as such in the output. Output oriented markedness constraints thus have a hard time making reference to the order. For exactly this reason I will pursue a containment based approach. Containment (Prince & Smolensky 1993) assumes that every output candidates contains the input, i.e. there is no literal deletion. Such an approach contrasts with correspondence theory with McCarthy & Prince (1995), where faithfulness constraints refer to a special correspondence relation between elements in the input and the output. Following Zaleska (2018) in taking feature preservation and feature sharing as the two main motivations for vowel coalescence, I will assume that new constraints of the *SPREADR/L type can make reference to the linear order of both input and output vowels.

The crucial data from Mee show that the result of coalescence, independent of morphosyntactic context, always preserves the [round] specification of the first vowel. This implies that linear order has to play a crucial role, if we can exclude all other possible explanations.

(1) Linear Order matters in Mee Vowel Coalescence.

a. dideːwa
   didi-owa
   sick-house
   'hospital' (Takimai 2015:59)

b. uwoːpoge
   uwo-epoge
   water-saliva
   'water foam' (Takimai 2015:321)

This term paper will be structured as follows: the data will be presented in more detail in section 2, including the argumentation for the interpretation of the data and the empirical generalizations. This will be followed by a description of the framework and the analysis proposed here, with a special focus on the proposed *SPREADR/L. In section 4, I will discuss the approach presented in Casali (1996, 1997) and show that it cannot derive the data before concluding in section 5.

2 Data

The data are mostly taken from a Mee-Indonesian dictionary (Takimai 2015). These were supplement by own data, elicited in several meetings with a young male native speaker. Additionally, some compound examples were taken from Hyman & Kobepa (2013). All data are marked for their source. It should also be noted that compounds proved notoriously difficult to elicit.

I will refrain from looking at hiatus resolution for long vowels and diphthongs, because they are not frequent enough to derive empirical generalizations from the limited set of data that we can access. I will also not look at prefixes, since they display a distinct vowel hiatus resolution strategy. Unfortunately the vowel /u/ is also not frequent enough to provide a lot of data. Another matter that will be ignored is hiatus resolution at word boundaries, since, again, another vowel hiatus resolution strategy is used. This is particulary relevant for compounds, which often alternate with juxtaposition.

Mee has a classical five vowel system. I will follow de Lacy (2002) in calling the word internal vowel hiatus resolution coalescence, because there is at least one combination (i+o), where the resulting vowel inherits features from both vowels. The compound in (2) exemplifies this patterns. The resulting vowel [eː] inherits its height features from /o/ and its rounding and backness features from /i/.

(2) dideːwaa
didi-owaa
sick-house
'hospital' (Takimai 2015:59)

The morphological context for this pattern is threefold: it applies in compounds (cf. (2)), reduplications (cf. (3-a)) and in suffixation (cf. (3-b)). All of these share the property of being a morpheme boundary, either between stems or between stems and suffix.

(3) Different morphological contexts for vowel coalescence in Mee

a. egoːgo
ego~ego
ashamed-ADJVZ
'shy' (reduplication) (Takimai 2015:76)

b. aneːpa
ani-epa
1SG-POS
'to me, at me' (suffixation) (Takimai 2015:85)

The empirical generalizations are straightforward. Apart from the general ban on diphthongs with a non-high second vowel, there is also a ban on non-low vowels that differ in rounding. This is crucially repaired by adjusting the rounding of the second vowel to the value of the first, cf. (3-a). This generalization about the linear order is irrespective of the morphological context. It works for compounds resulting in unrounded vowels (2) and compounds resulting in rounded vowels (4-a). Reduplication is not common enough to yield results for all of these combinations. For suffixation (4-b) it is less easy to provide examples of rounding of the second vowel getting lost, for the simple reason that if the rounding is always lost, we will never see it. A suffix never occurs on it own. Even though an /u/ could surface following an /a/, we do not find such data, because /u/ is the least frequent vowel. Mee only allows open syllables, so we do not get the chance to observe the first vowel of a suffix after consonant final stems.

(4) a. uwoːpoge
uwo-epoge
water-saliva
'water foam' (Takimai 2015:321)
b. bedoudo
bedo-ido
bird-PL
'birds' (own data)
c. pekoːpa
peku-epa
lake-POS
'near a lake' (Takimai 2015:229)

Generally, the coalescence of two vowels always yields a vowel with the height of the lower of the two input vowels (3-b), as predicted by Parkinson (1996). As seen in (5-a) and (5-b) a combination of an /a/ with a following or preceding mid vowel will always yield a long [aː]. Similarly, a mid vowel following a high vowel yields a long mid vowel (5-c), but not for the reverse order (4-b), since diphthongs ending in a high vowel are allowed.

(5) a. uwaːwe
uwo-awee
water-container
'water container' (Takimai 2015:33)
b. ekinaːdo
ekina-edo
pig-tooth
'pig fangs' (Takimai 2015:79)
c. ugeːniya
ugi-eniya
peak-spirit
'snake (monster)' (Hyman & Kobepa 2013)

More examples can be found in appendix A. An overview of the outcomes of coalesence is given in (6). As mentioned above there are some gaps for /u/ in the data.

(6) The outcomes of vowel coalescence in Mee

1\2	a	e	i	o	u
a	aː	aː	ai	aː	au
e	aː	eː	ei	eː	-
i	aː	eː	iː	eː	-
o	aː	oː	ou	oː	ou
u	aː	oː	uː	-	uː

3 Analysis

In this section I will show, that vowel coalescence in Mee requires reference to linear order. The analysis will be couched in the framework of Colored Containment (van Oostendorp 2007). This framework is based on optimality theory, thus deriving ouput forms by an evaluation against a ranked set of constraints. The crucial assumption is that the morphological affiliation of phonological material is not deleted or changed in phonology, but phonology can only access the differences between the affiliations, not refer to specific morphological information. The morphological affiliation of an element is metaphorically referred to as its color. Epenthetic elements are referred to as colorless. Instead of deletion, which is impossible in containment theory, association lines can be marked as phonetically invisible.

Following Zaleska (2018), I assume that the motivation for vowel coalescence are constraints of the Share(F) and Max(F) type. This is connected to the use of autosegmental representations, that I will continue. Note that the correspondence theoretic faithfulness constraints have been reformulated here as structural markedness constraints.

(7) Some General Constraint Schemes

a. $\textsc{Share}^{[G]}_{[\alpha F]}$

A pair of adjacent segment nodes linked to a [±F] feature with the value α should share a [G] feature.

b. Max(αF)

A feature F with the value α should be associated to a segmental root node.

c. Dep(F)

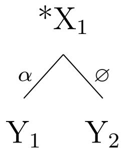
A feature F should bear a color.

The *SpreadR/L constraint scheme is more complicated. They should penalize a colorless association line being to the right/left of a colored association line in a multiple linking configuration. These configurations that should be banned are shown in (8).

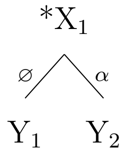
Colorless association lines are annotated with an empty set $\varnothing$, colored ones with an alpha α.

(8) Configurations to ban by *SpreadR/L

a. *SpreadR =



b. *SpreadL =



These very obvious structures can be translated into a slightly more complicated and more formal definition as shown in (9). Note that these constraints do not make direct reference to spreading into the other direction as a repair strategy. They resemble the correspondence theoretic Initial and Final in McCarthy (2009), which are ultimately based on the Anchor constraint family (McCarthy & Prince 1993, 1995). There is one crucial difference though. The constraints in McCarthy (2009) explicitly cannot make reference to material that is only present in the input but not pronounced in the output, because they are based on the notion of correspondence. They could thus not serve as substitutes in cases of vowel coalescence.

(9) *SpreadR/L constraint scheme

a. *SpreadR
   The node Y_1 connected to node X_1 by a colorless association line should not be to the right of node Y_2 connected to X_1 by a colored association line.

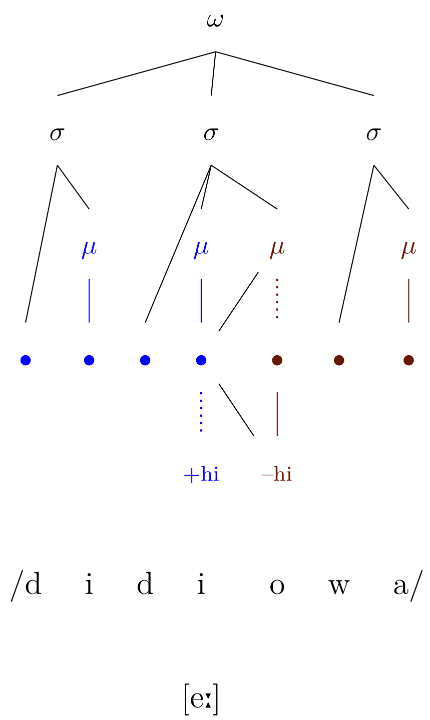
b. *SpreadL
   The node Y_1 connected to node X_1 by a colorless association line should not be to the left of node Y_2 connected to X_1 by a colored association line.

Let us now turn to the derivation of the actual data in Mee. I will abbreviate autosegmental structures in the tableaux as strings of segments. Nevertheless the structure is illustrated in (10). Morphological affiliation is marked by brown and blue color, black association lines are colorless, i.e. epenethetic. Phonetically invisible association lines are dotted. Since constraints crucially have to refer to these dotted lines, I assume the Cloning Hypothesis (Trommer 2011), which states that constraints can make reference to either all structure or only the structure that is phonetically visible.[1] As seen in (10), the

[1] In the following, markedness constraints making reference only to surface structure are underlined. This is not true for the Deo and Max constraints.

output candidate should preserve the [-high] feature of the second vowel /o/ by spreading it to the segmental root node of the preceding /i/. The [+high] feature of /i/ should then be kept from being pronounced, by marking its association line to the segmental root node as phonetically invisible. Additionally, to ensure the correct vowel length, the mora of the second vowel /o/ has to be connected to the preceding vowel /e/. This vowel is thus bimoraic, i.e. long. The deletion of the second vowel is then achieved by excluding it from the prosodic structure by marking the association line linking it to its dominating mora phonetically invisible.

(10) Coalescence in /didi-owa/ [dideːwa]



Let us start with the derivation of /didi/-/owa/ [dideːwa] ''hospital, where the resulting vowel [eː] takes the [-round] value of the underlying first vowel /i/. The first tableau in (11) show the choice of the hiatus resolution strategy. The constraint $\underline{\text{*VV}^{\text{[-hi]}}}$ that triggers the vowel coalescence here is a constraint requiring the second vowel in a pair of adjacent vowels to bear a [+high] feature. This already excludes the faithful candidate a. Vowel deletion without compensatory lengthening or vowel coalescence to a short vowel as in candidate c. would violate Max(μ), since one mora would have to be made phonetically invisible. Inserting a colorless segmental root node is penalized by the constraint Dep(•), excluding glide insertion in candidate d. as a hiatus resolution strategy. The definitions for the constraints are given in (12).

(11) Evaluation of /didi/-/owa/ [dideːwa] ‘hospital’

a. Choice of Hiatus Resolution Strategy

/didi/-/owaa/	MAX(μ)	*VV$^{[\text{-hi}]}$	DEP(•)
a. didiowa		*!	
☞b. dideːwa			
c. didiwa	*!		
c. didijowa			*!

b. Result of Vowel Coalescence

/didi/-/owaa/	*VV$^{[\text{-hi}]}$	SH$^{[\text{rd}]}_{[\text{-lo}]}$	MAX(-hi)	MAX(+hi)	*SPL(rd)
☞a. dideːwa				*	
b. didiuwa		*!			
c. didiewa	*!				
d. didiːwa			*!		
e. didoːwa				*	*!

(12) Constraints for choice of the hiatus resolution strategy

a. *VV$^{[\text{-high}]}$

In a sequence of two adjacent segmental root nodes linked to the feature [-consonantal] by a phonetically visible association, the second one should be linked to a [+high] feature by a phonetically visible association line.

b. MAX(μ)

A mora should be associated to a phonetically visible syllable as well as a segmental root node by phonetically visible association lines.

c. DEP(•)

A segmental root node shoudl bear a color.

The second tableau in (11) shows the result of vowel coalescence. In addition to the *VV$^{[\text{-hi}]}$ constraint that blocks candidate c. with feature sharing for roundedness but a non-high vowel as the second vowel, a SHARE constraint requires non-low vowels to share a [round] feature. This constraint is violated by candidate b., which has a high vowel as the second vowel, but differing rounding values. It is crucial here the constraint MAX(-hi) is ranked above MAX(+high), thus resulting in the lower height feature as a winner. This excludes candidate d., which has coalesced the two vowels into a long high vowel.

The choice between candidate a. and candidate e. is now a matter of linear order. Either the [-round] feature of the first vowel /i/ is preserved or the [+round] feature of the second vowel. The *SPREADL(round) constraint is violated by the latter because it penalizes a colorless association line linking the [+round] feature to the segmental root node of /i/, which was already linked to a [-round] feature by a colored association line *to the right.* Both of these constraints make crucial reference to the whole phonological structure, i.e. to properties of the phonetically invisible segmental root node of the second underlying vowel. The formal definition of these constraints are given in (13).

(13) Constraints governing the result of vowel coalescence

a. *SPREADL(rd)

A V-Place node connected to a [round] feature by a colorless association line should not be to the left of another V-Place node connected to the same [round] feature by a colored association line.

b. $\text{SHARE}^{\text{[round]}}_{\text{[-low]}}$

A pair of adjacent segment nodes linked to a [-low] and a [-consonantal] feature should share a [round] feature.

c. MAX(-hi)

A [-high] feature should be associated to a phonetically visible segmental root node by a phonetically visible association line.

d. MAX(+hi)

A [+high] feature should be associated to a phonetically visible segmental root node by a phonetically visible association line.

It should be clear here that further constraint rankings like MAX(+lo)≫MAX(+lo) to ensure that it is always the lower vowel that 'wins'. Note also that this approach of course has no problem with the reverse order of rounded and unrounded vowels. A word like /uwo-epoge/ [uwoːpoge] can be derived with the same constraint ranking used above. Candidates b.-d. are excluded for the same reason that they are excluded in the tableau above. Candidate e. is also again excluded because it violates the *SPREADL(rd) constraint. This is because it adds an association line to the left of another one, namely between the segmental root node of /o/ and the [-round] feature that is already connected to the segmental root node of /e/. This colorless association line now links a node to the left of a node already linked to the same segmental root node.

(14) Reverse order of [round] features

/uwo/-/epoge/	*VV[-hi]	$\text{SH}^{\text{[rd]}}_{\text{[-lo]}}$	MAX(-hi)	MAX(+hi)	*SPL(rd)
☞a. uwoːpoge				*	
b. uwuipoge		*!			
c. uwoepoge	*!				
d. uwuːpoge			*!		
e. uweːpoge				*	*!

Another argument in favor of this approach are the diphthongs that are formed if two vowels already satisfy the *VV[-high] constraint. Take for example the word /eto-ije/ [etouje] 'sugar cane leaf'. Even though no coalescence takes place, both vowels share a rounding feature. This makes the above analysis less opaque, since we see a clear surface effect of the Share constraint. An evaluation of this compound is given in (15). As shown, candidate a. loses to candidate b., because in the former the adjacent vowels [oi] do not share a [round] feature. Coalescence, as shown in candidate e. and candidate d. will always violate some Max constraints for vowel height and is therefore excluded. The effect of SpreadL(round) is also at work, since candidate e. is excluded for spreading the [round] feature into the wrong direction.

(15) Rounding assimilation in diphthongs

/eto/-/ije/	$*VV^{[-hi]}$	$Sh^{[rd]}_{[-lo]}$	Max(-hi)	Max(+hi)	*SpL(rd)
a. etoije		*!			
☞b. etouje					
c. etoːje				*!	
d. etiːje			*!		
e. eteije					*!

4 Discussion

This section will be concerned with the approach in Casali (1996). I will show that his approach fails to derive the Mee data. This contrasts with the above approach.

Casali (1997) proposes the constraints in (16) to derive the target of vowel deletion as a hiatus resolution. He claims that there are no languages that consistently delete the second vowel, independent of morphosyntactic context. In Casali (1997) this approach is extended to vowel coalescence[2], thereby predicting that there is no language that consistently deletes a certain feature of the second vowel, regardless of general markedness and morphosyntactic context. In the section above I have shown that Mee is exactly such a language, because it consistently deletes the [round] feature of the second vowel in vowel hiatus.

The constraint in (16) protect elements in several positions. A morphological distinction between functional and lexical material is incorporated by the MaxLex that preserves lexical information, but not functional information. The initial position of words and morphemes is given a special status by the MaxWI and MaxMI. Additionally monosegmental morphemes are under the special protection of MaxMS.

[2]Since Casali (1996) uses a containment system and Casali (1997) uses a correpondence system the constraint names are different. Nevertheless, both depend on positional specifications.

(16) Position sensitive MAX constraints in Casali (1997)

a. MAXWI
Every word-initial segment in the input must have a corresponding segment in the output.

b. MAXLEX
Every input segment in a lexical word must have a corresponding segment in the output.

c. MAXMS
Every input segment which is the only segment of a morpheme must have a corresponding segment.

d. MaxMI:
Every morpheme-initial segment in the input must have a corresponding segment in the output.

Suppose we tried to derive coalescence in Mee inside Casali's framework. Our main problem would be the form /didi+owa/ [dideːwa] 'hospital'. Here we have a compound where the rounding of the first vowel is preserved. Note that this vowel can not preserved by any constraint referring to the status as a lexical word, since in a compound both words are lexical words. It can also not be protected by a constraint on morpheme or word initial positions, since it is a morpheme and word final vowel. It is impossible to argue that any of the two stems are monosegmental. The attested candidate a. [dideːwa] can thus never surface because it is harmonically bound by candidate b. [didoːwa]. The evaluation is shown in (17).

(17) No protection for word final vowels

	didi+owa	MAXWI(rd)	MAXLEX(rd)	MAXMS(rd)	MAXMI(rd)
☛	dideːwa	∗!	∗		∗
☛	didoːwa		∗		

The only possible solution would be to introduce a non-positional constraint (markedness or faithfulness) to preserve the feature [-round] irrespective of position. This constraint has to be ranked higher than the constraints responsible for harmonically binding the correct output [dideːwa]: MAXWI and MAXMI.

(18) Non-positional [-round] preservation

	didi+owa	MAX(-rd)	MAX(+rd)	MAXWI(rd)	MAXMI(rd)
☞	dideːwa		∗	∗	∗
	didoːwa	∗!			

This ranking however will make it impossible to correctly derive the data for compounds with the reverse order of rounded and unrounded vowels at the morpheme boundary, e.g. /uwo-epoge/ [uwoːpoge] 'water foam'. It would predict a resulting [-round] vowels, where in fact we get a long [+round] vowel. The ranking hence makes the wrong predictions and results in a ranking paradox: non-positional constraints preserving either value of the feature [round] cannot be ranked with regards to one another.

(19) Non-positional constraints fail for reverse order of [round] features

	uwo-epoge	MAX(-rd)	MAX(+rd)	MAXWI(rd)	MAXMI(rd)
☛	uwoːpoge	*!		*	*
☛	uweːpoge		*		

It should also be noted that this problem cannot be solved by including more morphological information into the representation. Since Mee compounds are right-headed a constraint like HEADFAITH (Revithiadou 1999) would not help, since it would predict that the vowel of the morphological head, i.e. the second vowel, should preserve its rounding value.

5 Conclusion

In this term paper I have presented a counterexample to the claim that linear order plays no role in vowel hiatus resolution. The data in Mee clearly show that the result of vowel coalescence always bears the rounding value of the underlyingly first vowel. I have also shown that it is possible to derive this pattern in an analysis couched into the framework of Colored Containment with a new type of constraints banning spreading of a certain feature in a certain direction. This term paper thus adds to the evidence for directionality in segmental phonology from vowel harmony (Baker & Harveya 2004; Mahanta 2008), contrasting with approaches not making any reference to linear order like the one in Casali (1996, 1997), which cannot derive the data in Mee, as I have shown. The prediction that no language consistently preserves the first of two elements in vowel hiatus is not borne out.

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Appendices

A Selected Examples for Vowel Coalescence by Morphological context

The following is a list of examples sorted by morphological context and secondarily by the first and second vowel that come together forming a hiatus. The data are from Takimai (2015) if followed by a page number, differing sources are indicated. All data are in their orthographic form, long vowels being indicated by doubled vowel letters. The first example of each vowel combination is preceded by a line stating this. The group of words glossed as POS deserve special mention. They form a system of phonologically bound location, direction and position markers, similar in idiosyncrasy to prepositions in Germanic languages.

(20) Compound Examples

a. a+a

(i) yoka-aga
child-generation
'youth' (p. 364)

b. a+e

(i) epaana
epa-ena
base-one
'from the same family' (p. 84)

(ii) ekinaadaa
ekina-eda
pig fence
'pig fence' (p. 72)

(iii) ekinaago
ekina-ego
pig-tooth
'pig fangs' (p. 79)

(iv) tumaana
tuma-ena
family-one
'from a different family' (p. 83)

(v) owaada
owa-eda
house-fence
'a fence around a house' (p. 71)

c. a+i

(i) pekaiyo
peka-iyo
eye-hair
'eyelash' (p. 122)

d. a+o

(i) baawa
ba-owaa
excrement-house
'toilet' (Hyman & Kobepa 2013)

(ii) amaadi
ama-odi
breast-liquid
'breast milk' (p. 25)

e. a+u

(i) amauta
ama-uta
breast-fruit
'woman's breasts' (p. 312)

(ii) tikauwa
tika-uwa
past-season
'past time' (p. 318)

f. e+e

(i) ebeeguu
ebe-eguu
mouth-edge
'beak' (p. 70)

g. e+a

(i) etikaagoo
etike-agoo
right-month
'at the beginning of a month' (p. 90)

h. e+i
   (i) iyeimo
       iye-imo
       sheet-leaf
       'shoot, sprout' (p. 121)

i. e+o
   (i) yameewaa
       yame-owa
       male-house
       'house for males' (own data)

j. i+e
   (i) budeeda
       bugi-eda
       garden-fence
       'fence around a garden' (p. 72)
   (ii) ugeeniya
       ugi-eniya
       peak-spirit
       'snake (monster)' (Hyman & Kobepa 2013)

k. i+o
   (i) dideewaa
       didi-owaa
       sick-house
       'hospital' (p. 59)

l. o+a
   (i) uwaawee
       uwo-awee
       water-container
       'water container' (p. 33)

m. o+e
   (i) uwoopoge
       uwo-epoge
       water-saliva
       'water foam' (p. 321)
   (ii) etooki
       eto-eki
       sugar.cane-waste
       'sugar cane waste' (p. 90)

n. o+i

(i) uwouda
uwo-ida
water-reed
'wet reed' (p. 323)

(ii) etouye eto-iye
sugar.cane-leave
sugar cane leave (p. 90)

(iii) etouyoo eto-iyoo
sugar.cane-seed
sugar cane seed (p. 90)

o. o+o

(i) bedoowaa
bedo-owaa
bird-house
'poultry coop' (own data)

p. o+u

(i) potoute
poto-ute
wallet-small.bag
'wallet' (p. 313)

(ii) uwoutiyaa uwo-utiyaa
water-evil.spirit
'evil spirit inside water' (p. 314)

(21) Suffixed Examples (Takimai 2015)

a. a+a

(i) edaage
eda-age
fence-POS
'inside the fence' (p. 71)

(ii) epaawe
epa-awe
sky-POS
'in the sky' (p. 84)

(iii) wiyaago
wiya-ago
two-ORD
'second' (p. 340)

(iv) abataato
abata-ato
morning-POS
'after the morning' (p. 12)

(v) adaawee
ada-awee
slope-POS
'overland' (p. 13)

b. a+e

(i) edaate
eda-ete
buy-PROG
'is buying' (own data)

(ii) duwa-ate
duwa-ete
cut-PROG
'is cutting' (own data)

c. a+i

(i) adaida
ada-ida
slope-POS
'on land' (p. 13)

(ii) etaida
eta-ida
tongue-POS
'at the tongue' (p. 88)

(iii) yokaido
yoka-ido
child-PL
'children' (p. 119)

(iv) komaido
koma-ido
boat-PL
'boats' (p. 119)

(v) komaiga
koma-iga
boat-POS
'by boat' (p. 119)

d. a+u
   (i) kapauto
   kapa-uto
   near-POS
   ‘nearby’ (p. 315)

e. e+a
   (i) etikaato
   etike-ato
   right-POS
   ’to the right’ (p. 32, 90)

f. e+e
   (i) ikaneepa
   ikane-epa
   fish-POS
   ‘towards the fishing place’ (p. 85)

g. e+i
   (i) iyeida
   iye-ida
   sheet-POS
   ‘on the leaf’ (p. 121)

h. i+a
   (i) dudaawee
   dudi-awee
   ditch-POS
   ‘into the ditch’ (p. 32, 66)
   (ii) dimaawee
   dimi-awee
   peak-POS
   ‘across a mountain peak’ (p. 61)

i. i+e
   (i) aneepa
   ani-epa
   1SG-POS
   ‘to me, at me’ (p. 85)
   (ii) udeepa
   udi-epa
   shrimp-POS
   ‘towards the shrimp fishing place’ (p. 85)

j. i+i
   (i) ediida
   edi-ida
   rain-POS
   'at a rainy place' (p. 73)
k. o+a
   (i) miyaato
   miyo-ato
   bottom-POS
   'in the past' (p. 32)
   (ii) uwaawe
   uwo-awe
   water-POS
   'along the river' (p. 318)
   (iii) wadaato
   wado-ato
   top-POS
   'in the future' (p. 32)
l. o+e
   (i) yoote
   yo-ete
   cook-PROG
   'is cooking' (own data)
   (ii) doote
   do-ete
   see-PROG
   'is seeing' (own data)
m. o+i
   (i) bedoudo
   bedo-ido
   bird-PL
   'birds' (own data)
   (ii) doupiga
   do-ipiga
   see-FUT.1SG
   'I will see' (own data)

n. o+u

(i) gebouto
gebo-uto
side-POS
'at the edge' (p. 315)

(ii) ketagouto
ketago-uto
last-POS
'in the last part' (p. 315)

o. u+a

(i) mugaawee
mugu-awee
hole-POS (p. 32, 192)
'in a hole'

p. u+e

(i) pekoopa
peku-epa
lake-POS
'near a lake' (p. 229)

q. u+i

(i) eguuda
egu-ida
edge-POS
'at the edge' (p. 76)

r. u+u

(i) aguuto
agu-uto
river.bank-POS
'at the river bank' (p. 315)

(22) Reduplicated Examples (Takimai 2015)

a. a+a abuyaabuya
abuya~abuya
public~ADVZ
'together' (p. 12)

b. e+e ebeebe
ebe~ebe
rest~ADJVZ
'left-over (adj.)' (p. 85)

c. e+o egoogo
ego~ego
ashamed~ADJVZ
'shy' (p. 76)

d. o+u uwouwo
uwo~uwo
water~ADJVZ
'aqueous, liquid' (p. 323)

B Abbreviations

(23) Glossing Abbreviations

1	first person
ADJVZ	adjectivizer
ADVZ	adverbalizer
FUT	future tense
ORD	ordinal number
PL	plural
POS	location marker, positional
PROG	progressive aspect
SG	singular

(24) Autosegmental nodes and features

rd	round
lo	low
hi	high
•	segmental root node

(25) Constraints

DEP	DEPENDENCY
MAX	MAXIMALITY
SH	SHARE
*SP	*SPREAD

Eigenständigkeitserklärung

Hiermit versichere ich, dass ich die Hausarbeit selbstständig und nur unter Verwendung der angegebenen Hilfsmittel geschrieben habe. Alle Zitate sind als solche gekennzeichnet.

Leipzig, 14.05.2018 — Sören E. Tebay

Ort, Datum — Unterschrift