

To appear in *Handbook of Vowel Harmony*, ed. by Harry van der Hulst and Nancy Ritter. Oxford: OUP.

Chapter 75: Vowel harmony in Papuan languages

Marian Klamer

1 Introduction

The term “Papuan” refers to approximately 860 languages, comprising 43 distinct families and 37 isolates (Palmer 2018: 6). It does not claim genealogical relatedness between these families; it is rather understood as a shorthand to refer to the non-Austronesian and non-Australian languages of the southwest Pacific (Foley 1986: 3).

In its prototypical form, vowel harmony (VH) involves agreement between all and only vowels in a “word”, excluding vowels that do not have a harmonic counterpart (van der Hulst 2018: 3). Reports of such canonical cases of “unbounded” VH in Papuan languages are extremely rare. This may be due to lack of information: only a tiny fraction of the Papuan languages have been described (Hammarström & Nordhoff 2012), so there may be cases of canonical VH in Papuan languages which are yet to be described. It may also indicate that canonical VH is cross-linguistically less common than is often assumed. This chapter reflects the current descriptive and/or typological asymmetry in VH processes in Papuan languages by presenting only two cases of “unbounded” VH and five cases where VH is limited to adjacent segments.

In what follows I describe the vowel harmony patterns attested in languages of three Papuan families: Ngkolmpu and Komnzo of the Yam family (section 2), Amele, Mian and Umbu-Ungu of the Trans New Guinea (TNG) family (section 3), and Kaera of the Timor Alor Pantar family (section 4). Section 5 presents some conclusions.

2 Vowel harmony in Ngkolmpu and Komnzo (Yam family)

The Yam family (previously known under the name Morehead-Maró, Ross 2005) comprises around 15-20 languages spoken in Southern New Guinea (Evans et al. 2018: 678). One of the languages in this family, Ngkolmpu [kcd], also known as Ngkâlmpw or Kanum, is spoken by about 150 people living in the extreme south east of the Indonesian province of Papua, in the border area between Indonesia and Papua New Guinea (Carroll 2016: 3–7). Ngkolmpu has seven vowels /i, ε, æ, u, ə, ɒ, a/ (Carroll 2016: 44). Schwa is not phonemic but is used frequently and predictably as an epenthetic vowel that breaks up illicit consonant clusters (Carroll 2016: 44–46).

Ngkolmpu has some restricted backness harmony (i.e., agreement along the front-back axis), where the first vowel of the stem is the trigger and the vowel of one particular derivational verbal prefix, referred to as the “diathetic prefix”, is the target (Carroll 2016: 54–55). The diathetic prefix has the shape of a vowel and occurs adjacent to verb stems starting with a consonant (Carroll 2016: 196). (1) contains the underived form of *wanse* ‘fall’, in (2) *wanse* has the diathetic prefix *V-* in a “middle” verb form, while in (3), the prefix derives an applicative verb. In (2)–(3), the vowel prefix *a-* and the first vowel in the stem *wanse* ‘fall’ form a harmonic pair. If there is an object (“undergoer”) prefix, it precedes the diathetic prefix, as shown in (3).

(1) Markus-w pr pi s- wanse -y
 Markus-ERG tree 3.ABS 3.U- fall.RS -SG.A.HOD
 ‘Markus felled the tree.’ (Carroll 2016: 138)

(2) Markus t- a- wanse -y
 Markus MID.PFV- DIA- fall.RS -SG.A.HOD
 ‘Markus fell (earlier today).’ (Carroll 2016: 138)

(3) Markus-w pr pi nson b- a- wanse -y
 Markus-ERG tree 3.ABS 1SG.DAT 1SG.U- DIA- fall.PFV -SG.A.HOD
 ‘Markus felled the tree for me.’ (Carroll 2016: 138)

The vowel of the diathetic prefix may be either [a], as illustrated above, or [ɛ] or [ɔ], in harmony with the first vowel of the verb stem. This is illustrated in (4) for a front vowel trigger and a target [ɛ], and in (5) for a back vowel trigger and a target [ɔ].

(4) a. /V-tripin/ → [ʔɛ.tri.pin] ‘scratch’
 b. /V-ke/ → [ʔɛ.ke] ‘return’
 c. /V-mplæ/ → [ʔɛ.mplæ] ‘hit’ (Carroll 2016: 55)

(5) a. /V-lusi/ → [ʔɔ.lu.si] ‘arrange’¹
 b. /V-wo/ → [ʔɔ.wo] ‘see’
 c. /V-rkɔ/ → [ʔɔr.kɔ] ‘loosen’ (Carroll 2016: 55)

¹ The source gives [ʔu.lu.si], the author has confirmed that this is a typo.

The vowel harmony of the Ngkolmpu diathetic prefix is not completely regular: 200 out of 220 attested verbs have a harmonic vowel in their prefix, for the remaining verbs the prefix vowel is assumed to be lexically specified by the verb. Examples are given in (6).

- (6) a. /a-ntɔŋk/ → [ʔa.ntɔŋk] ‘carry’
 b. /a-tor/ → [ʔa.tor] ‘search’
 c. /ɔ-wnɛ/ → [ʔɔw.ne] ‘drink’ (Carroll 2016: 55)

Verbs with vowel-initial stems do not occur with the diathetic prefix *a-*. However, the majority of stem-initial vowels harmonize with the following vowel in the stem. This suggests that these vowels are fossilized diathetic prefixes inherent to the stem (Carroll 2016: 197).

Komnzo [tci] (Döhler 2018) is another Yam language with vowel harmony. It is spoken by 150–250 Farem people in central Morehead, in the southwestern corner of the Western Province of Papua New Guinea. Komnzo has eight vowels /i, y, u, e, œ, o, æ, a/ and schwa as a marginal phoneme. Komnzo harmonizes vowels that precede the emphatic clitic =wæ ‘EMPH’ (Döhler 2018: 72–73). Encliticization of =wæ causes a change in quality of the vowel of the preceding syllable, regardless of whether this syllable is part of a root (content or function word), a suffix or another enclitic. In (7)–(9), the vowel harmony on target vowels /o, a, e/ in final open syllables preceding =wæ is illustrated. Harmonic pairs are /a/ and /æ/ in (7), /o/ and /œ/ in (8), and /e/ and /œ/ in (9) (Döhler 2018: 73). The process shown in (9) seems poorly motivated from a phonological point of view: the last vowel of /zafɛ/ gets rounded, though neither the preceding nor the following vowel is rounded. One possible explanation could be analogy, e.g. to the cases in (8); which would suggest that the process is sensitive to morphology or the lexicon.

- | | | |
|-----|--------------------------------|---------------------------------------|
| (7) | nima ‘this way’ | nimæ=wæ
like.this=EMPH |
| | bafanema ‘because of that one’ | baf=ane=mæ=wæ
RECOG=POSS=CHAR=EMPH |
| (8) | karfo ‘to the village’ | kar=fœ=wæ
village=ABL=EMPH |
| | bobo ‘towards there’ | bobœ=wæ
MED.ALL=EMPH |

vowel is again in harmony with the default /e/ from the infinitive suffix, but is then rounded to become [o] assimilating with the labiovelar /w/ in the pronominal suffix *-Vw* ‘1DU’. (Compare the future form *f-ew-an* where this assimilation process is blocked). Next, the epenthetic /o/ in [fowona] copies the rounded vowel in *-ow* ‘1DU’. In the 2/3 dualis form, the vowel in *-Vsi* is specified as /e/, harmonizing with the vowel in the infinitive suffix *-e?*. The derivation of the first plural form is identical to the first dual form, except that the labiovelar is /g^hb/ instead of /w/. The derivation of the 2/3 plural form is the same as for the 2/3 dual form except that the agreement marker is *-Vgi* instead of *-Vsi*.

Table 1. Vowel harmony with suffix *-na* ‘PRS’ in present tense forms of *f-e?* ‘see-INF’

Person and number (NOM)		Underlying	Surface	Meaning
1SG	<i>-ig</i>	/f-ig-na/	[figina]	‘I see’
2SG	<i>-Vg</i>	/f-Vg-na/	[fagana]	‘you (SG) see’
3SG	∅	/f-na/	[fena]	‘s/he sees’
1DU	<i>-Vw</i>	/f-Vw-na/	[fowona]	‘we (DU) see’
2/3DU	<i>-Vsi</i>	/f-Vsi-na/	[fesina]	‘you/they (DU) see’
1PL	<i>-Vg^hb</i>	/f-Vg ^h b-na	[fogbona]	‘we (PL) see’
2/3PL	<i>-Vgi</i>	/f-Vgi-na/	[fegina]	‘you/they (PL) see’

Vowel harmony in inflected verbs also occurs in forms containing the habitual past tense suffix *-ol*, as illustrated in Table 2. The VH trigger is the vowel in the tense suffix, the target is the unspecified vowel in the pronominal markers that follow it. Note that VH in habitual past tense forms is from left to right, while it is from right to left in present tense forms (Table 1).

Table 2. Vowel harmony with affix *-ol* ‘HAB.PST’ in habitual past tense forms of *f-* ‘see’

Person and number (NOM)		Underlying	Surface	Meaning
1SG	<i>-ig</i>	/f-ol-ig/	[folig]	‘I used to see’
2SG	<i>-Vg</i>	/f-ol-Vg/	[folog]	‘you (SG) used to see’
3SG	<i>-Vi</i>	/f-ol-Vi/	[foloi]	‘s/he used to see’
1DU	<i>-Vw</i>	/f-ol-Vw/	[folou]	‘we (DU) used to see’
2/3DU	<i>-Vsi</i>	/f-ol-Vsi/	[folosi]	‘you/they (DU) used to see’
1PL	<i>-Vg^hb</i>	/f-ol-Vg ^h b/	[folob]	‘we (PL) used to see’
2/3PL	<i>-Vig</i>	/f-ol-Vig/	[foloig]	‘you/they (PL) used to see’

The second domain of VH in Amele is in inalienably possessed nouns, where the trigger is the nominal stem vowel, and the target is the adjacent vowel in the possessive suffix for 2/3 dual and plural forms, as illustrated in Table 3. The first person possessed forms take the suffixes *-ile* ‘DUAL’ and *-ige* ‘PLURAL’, which remain the same for all stem forms.

Table 3. Inalienable nouns with possessive suffixes showing Vowel harmony in 2/3 person forms

Person	Dual	Plural	Meaning
1	<i>majan-ile</i>	<i>majan-ige</i>	‘our shame’
2/3	<i>majan-ala</i>	<i>majan-aga</i>	‘your/their shame’
1	<i>dewen-ile</i>	<i>dewen-ige</i>	‘our body’
2/3	<i>dewen-ela</i>	<i>dewen-ega</i>	‘your/their body’
1	<i>bin-ile</i>	<i>bin-ige</i>	‘our aunt’
2/3	<i>bin-ila</i>	<i>bin-iga</i>	‘your/their aunt’
1	<i>osom-ile</i>	<i>osom-ige</i>	‘our brother-in-law’
2/3	<i>osom-ola</i>	<i>osom-oga</i>	‘your/their brother-in-law’
1	<i>hulin-ile</i>	<i>hulin-ige</i>	‘our encouragement’
2/3	<i>hulun-ula</i>	<i>hulun-uga</i>	‘your/their encouragement’

The second TNG language discussed here is Mian (also known as Mianmin or Miyanmin [mpt], Fedden 2011), which belongs to the Ok family in Central Southern New Guinea. Mian has six vowel phonemes and six (closing) diphthongs, namely /i, ε, a, a^ɿ, o, u, ai, a^ɿi, a^ɿu, εi, au, ou/. Vowels and diphthongs behave identically as nuclei in syllables, which are the tone-bearing units in tone assignment (Fedden 2011: 28).

Mian has some limited occurrences of vowel harmony. Three cases are distinguished: (a) a harmonizing vowel in the prefixes /lVb-/ and /tVb-/, which classify a noun according to certain salient characteristics of its referent, and (b) a harmonizing vowel in the modal suffix /-Vm/ ‘deontic’, and (c) vowel harmony inside the bound pronouns of the “alone”-series.

A subset of the Mian verbs (approximately 35 roots) require a classificatory prefix whose function is (a) to index the object of transitive verbs and the subject of intransitive verbs and (b) to classify the object/subject according to sex, shape, and function of its referent (Fedden 2011: 185). The vowel in two of these classificatory prefixes (those for ‘singular masculine’ and ‘singular long’) harmonizes with the first stem vowel, if the stem vowel is /e/. Other stem vowels do not

trigger harmony: compare (11), where the stem vowel is /a/ and the prefix vowel is /o/, with (12) where the stem vowel is /e/ and harmonizes with the prefix vowel.

- (11) **Do-fâ⁴**-Ø-i-o=be
 3SG.M_CL.O -give_birth.PFV-REAL-1SG.SBJ-EP=DECL
 ‘I have given birth to him.’ (Fedden 2011: 45)

- (12) **Deb-êb** un-Ø-e=be
 3SG.M_CL.O-take.PFV go.PFV-REAL-3SG.M.SBJ=DECL
 ‘He carried him away.’ (Fedden 2011: 45)

In case of a zero (phonologically null) verb stem, vowel harmony in classificatory prefixes is prompted by the vowel in the following suffix, for example, the subject marker *-i* in (13), or the irrealis suffix *aamab* in (14). Only the vowels /i/ and /a^s/ can be the trigger of this type of vowel harmony, which is optional and depends on speech tempo and speaker preference.

- (13) **Naka=e** **dob-Ø[^]-Ø-i=be** [dibibe]
 man=3SG.M 3SG.M-CL.O-take.PFV-REAL-1SG.SBJ=DECL
 ‘I have taken a husband.’ (Fedden 2011: 45)

- (14) **Geim=e** **tob-Ø[^]-aamab-i=be** [tabaamabibe]
 arrow=SG.N1 3SG.LONG.O-take.PFV-IRR.NANPL.SBJ-1SG.SBJ=DECL
 ‘I will take an arrow.’ (Fedden 2011: 45)

The second type of vowel harmony in Mian is found in the modal suffix /-Vm/ ‘deontic’. The vowel in this suffix harmonizes with the vowel in the following subject marker, see Table 4.⁵

⁴ The diacritic accent circonflex indicates LHL tone.

⁵ A similar process is attested in Nimboran [nir], harmony is also limited to certain particular (“apophonic”, Anceaux 1965). In Nimboran, these suffixes cause fronting of all vowels in the suffixes that precede them while stem vowels are not affected, see Inkelas (1993: 565).

Table 4. Vowel harmony in Mian forms of the deontic mood -Vm (Fedden 2011: 46)

V	Subject markers	Deontic mood	Gloss
/i/	-i ‘1SG’	<i>nini-n-im-i=be</i>	‘I should scrape’
	-ib ‘2/3PL.AN’	<i>nini-n-im-ib=obe</i>	‘you (PL)/they should scrape’
/ɛ/	-e ‘3SG.M’/‘3SG.N1’	<i>nini-n-em-e=be</i>	‘he should scrape’
	-eb ‘2SG’	<i>nini-n-em-eb=obe</i>	‘you should scrape’
/o/	-o ‘3SG.F’/‘3PL.N1’/‘N2’	<i>nini-n-om-o=be</i>	‘she should scrape’
	-ob ‘1PL.AN’	<i>nini-n-om-ob=obe</i>	‘we should scrape’

The third case of vowel harmony in Mian is found in a particular series of bound pronouns: the “alone”-series. This series is derived with the infix -*IV*- which is attached to the initial (C)V-syllable of the morphologically simple bound pronouns series for animates. The vowel in -*IV* harmonizes with the preceding vowel, see Table 5.

Table 5. Simple and “alone” bound pronoun series for animates in Mian (Fedden 2011: 129).

(The macron above vowels indicates high tone.)

Person and number	Gender	Simple bound pronouns (animates)	“Alone” bound pronouns (animates)	Gloss of “alone” pronouns
1SG		<i>nē-</i>	<i>nē-le-</i>	‘I alone’
2SG	MASC	<i>kēb-</i>	<i>kē-le-b-</i>	‘you (M) alone’
	FEM	<i>ōb-</i>	<i>ō-lo-b-</i>	‘you (F) alone’
3SG	MASC	<i>ē-</i>	<i>ē-le-</i>	‘he alone’
	FEM	<i>ō-</i>	<i>ō-lo-</i>	‘she alone’
1PL.EXCL		<i>nī-</i>	<i>nī-li-</i>	‘we (EXCL) alone’
1PL.INCL		<i>nīb-</i>	<i>nī-li-b-</i>	‘we (INCL) alone’
2PL		<i>īb-</i>	<i>ī-li-b-</i>	‘you (PL) alone’
3PL		<i>ī-</i>	<i>ī-li-</i>	‘they alone’

The last TNG language with vowel harmony discussed here is Umbu-Ungu (also known as Gawi(g)l or Kaugel, [ubu] Head 2011), spoken in the Southern and Western Highland Provinces of Papua New Guinea. Umbu-Ungu has five vowels /i, u, e, o, a/. Allomorphic variation in this

language is based on VH with the final vowel of verb stems. Verb stems only end in /i, u, e, o/; not in /a/. The first case of VH combines stems ending in /i, u/ with [high] suffix allomorphs, and stems ending in /e, o/ with [low] allomorphs. This is illustrated with verbs inflected for future tense [high] allomorph *-mbe* in (15), and the [low] allomorph *-mba* in (16). Stems with final /e/ select the [low] allomorph *-mba*, as shown in (17).

(15) **Pu** -mbe
 go -FUT.3SG
 ‘He will go.’ (Head 2011: 4)

(16) **To** -mba
 strike -FUT.3SG
 ‘He will strike.’ (Head 2011: 4)

(17) **Ena te** -mba...
 sun do -FUT.3SG
 ‘The sun will shine...’ (Head 2011: 180)

In the nominal domain, stem vowels trigger high-low harmony with the vowel in the determiner enclitic as well as the (optional) enclitic coding the grammatical function of the NP as “actor” in the clause, as illustrated in (18). Again a stem vowel /e/ selects [low] allomorphs, see (18).

(18)	a.	kongi	= mu	= ni	b.	ye	= mo	= ne
		pig	=ART.SG	=ACT		man	=ART.SG	=ACT
		‘the pig’				‘the man’		(Head 2011: 4)

In some allomorphs, vowels only differ along the front-back axis. For example, the distant past suffix has allomorphs *-ri* ~ *-ru* ‘DPST’ with [front] and [back] high vowels; there is no high-low allomorphy. (19a) illustrates VH between a high front vowel trigger in the verbal stem which selects the [front] allomorph *-ri*, (19b) illustrates a high back vowel trigger selecting the [back] allomorph *-ru*. In (20), a low front vowel in the stem selects [front] *-ri*, and a stem with a low back vowels select [back] *-ru*.

- (19) a. Si -ri -ndu b. Pu -ru -ndu
 give -DPST -1SG go -DPST -1SG
 ‘I gave’ ‘I went’ (Head 2011: 5)
- (20) a. Te -ri -ndu b. To -ru -ndu
 do -DPST -1SG strike -DPST -1SG
 ‘I did’ ‘I struck’ (Head 2011: 5)

Yet other suffixes in Umbu-Ungu contain an unspecified vowel and harmonize iteratively with the final stem vowel. Examples include the present tense suffix *-kV*, and the benefactive suffix *-ndV*, see (21)–(23). Note that in these examples, total left to right harmony stops at the second suffix, and high-low harmony governs the choice of the final first person singular suffix.

- (21) Te -nde -ke -ro
 do -BEN -PRS -1SG
 ‘I am doing it for...’ (Head 2011: 5)

- (22) Ni -ndi -ki -ru
 speak -BEN -PRS -1SG
 ‘I am saying it for...’ (Head 2011: 5)

- (23) To -ndo -ko -ro
 strike -BEN -PRS -1SG
 ‘I am striking it for...’ (Head 2011: 5)

4 Vowel harmony in Kaera (Timor Alor Pantar family)

Kaera belongs to the Timor Alor Pantar family, which contains approximately 25 languages spoken on the islands of Timor, Alor and Pantar in eastern Indonesia, located about a thousand kilometers to the west of mainland New Guinea (Holton & Klamer 2018).

Kaera [jka] (Klamer (2014)) is spoken by an estimated 5,500 people on the north-eastern coast of Pantar island. The Kaera vowel inventory is / i, i:, u, u:, ε, ε:, ɔ, ɔ:, a, a:/. The phonemic length distinction only applies in roots; affixes only have short vowels.

Kaera vowel harmony occurs in (1) possessive prefixes on nouns and (2) object prefixes on verbs. In singular prefixes, the vowel is determined by the vowel of the nominal or verbal stem. (In plural prefixes the vowel is always /i/). A possessor prefix is obligatory in inalienably possessed nouns (body part and kinship terms). Inalienable nouns that are consonant-initial select a syllabic prefix with an unspecified vowel; those that are vowel-initial select a consonantal prefix, see Table 6. The unspecified vowels in the syllabic inalienable possessive prefix and the initial vowel of the noun are in harmony. Alienable nouns, both consonant and vowel-initial, all select an invariant syllabic prefix with the vowel /e/, as in Table 7.

Table 6. Kaera nouns with harmonic inalienable possessor prefix

	‘father’	‘intestines’	‘stomach’	‘tongue’	‘fontanelle’	‘child’
1SG	<i>na-mam</i>	<i>nu-duyax</i>	<i>no-toku</i>	<i>ne-leb</i>	<i>ni-dimang</i>	<i>n-uah̃</i>
2SG	<i>a-mam</i>	<i>u-duyax</i>	<i>o-toku</i>	<i>e-leb</i>	<i>i-dimang</i>	\emptyset - <i>uah̃</i>
3SG	<i>ga-mam</i>	<i>gu-duyax</i>	<i>go-toku</i>	<i>ge-leb</i>	<i>gi-dimang</i>	<i>g-uah̃</i>

Table 7. Kaera nouns with non-harmonic alienable possessor prefix

	‘house’	‘village’	‘dog’	‘skin’	‘breast’	‘woman’
1SG	<i>ne-ma</i>	<i>ne-abang</i>	<i>ne-ibar</i>	<i>ne-koi</i>	<i>ne-tu</i>	<i>ne-umuḥ</i>
2SG	<i>e-ma</i>	<i>e-abang</i>	<i>e-ibar</i>	<i>e-koi</i>	<i>e-tu</i>	<i>e-umuḥ</i>
3SG	<i>ge-ma</i>	<i>ge-abang</i>	<i>ge-ibar</i>	<i>ge-koi</i>	<i>ge-tu</i>	<i>ge-umuḥ</i>

The second type of vowel harmony in Kaera occurs in transitive verbs that index their object with a prefix. Object prefixing is lexically restricted: it is obligatory in one verb class, optional in another, while still other transitive verbs do not take object prefixes at all (Klamer 2014: 132–133). Consonant-initial verbs take syllabic prefixes, vowel-initial verbs take consonantal prefixes. There are two types of syllabic object prefixes: one with an unspecified vowel, the other with an invariant vowel /a/, see Table 8. (Syllabic plural object prefixes always have a vowel /i/).

Table 8. Person prefixes indexing objects in Kaera

	C-initial verb		V-initial verb
	I	II	III
1SG	<i>nV-</i>	<i>na-</i>	<i>n-</i>
2SG	<i>V-</i>	<i>a-</i>	\emptyset -

3SG	<i>gV-</i>	<i>ga-</i>	<i>g-</i>
-----	------------	------------	-----------

The unspecified vowel in the syllabic object prefix harmonizes with the initial vowel of the verb root, see Table 9. (*Ni-riang* 1SG-look.after is translated as ‘look after me’; the other constructions follow the same pattern.)

Table 9. Kaera transitive verbs with harmonic object prefix

	‘look after’	‘kiss’	‘leave, let loose’	‘expel’	‘push’
1SG	<i>ni-riang</i>	<i>nu-muni</i>	<i>na-dag</i>	<i>ne-tero</i>	<i>no-tobung</i>
2SG	<i>i-riang</i>	<i>u-muni</i>	<i>a-dag</i>	<i>e-tero</i>	<i>o-tobung</i>
3SG	<i>gi-riang</i>	<i>gu-muni</i>	<i>ga-dag</i>	<i>ge-tero</i>	<i>go-tobung</i>

Among the root consonants intervening in Kaera vowel harmony, the glides form a special case. Glide-initial verb roots with a first or third person singular object prefix take consonantal prefixes from paradigm III, e.g. *n-yokung* ‘shake me’, not syllabic ones from paradigm I **no-yokung*, see Table 10. With a second person singular object they select a syllabic prefix with vowel harmony from paradigm I (Table 8): *o-yokung*, **yokung* ‘shake you’.

Table 10. Combination of prefix III and prefix II with verbs with initial glide [j, w]

	‘shake’	‘twist, turn around’	‘bathe-FIN’
1SG	<i>n- yokung *no-yokung</i>	<i>n- yayo</i>	<i>n- wey-o</i>
2SG	<i>o- yokung *yokung</i>	<i>a- yayo</i>	<i>e- wey-o</i>
3SG	<i>g- yokung</i>	<i>g- yayo</i>	<i>g- wey-o</i>

In sum, Kaera vowel harmony is bounded and it does not affect all vowels in the word. The trigger is the leftmost (first), unstressed vowel of the nominal or verbal root. The harmony applies from the root outward and involves total harmony. The target of the harmony process is the vowel in the prefix preceding the first vowel of the root. The domain of harmony is the inflected word, defined as a noun or verb with a pronominal (possessor or object) prefix. Any nominal or verbal suffixes that occur are not part of the domain (e.g. aspectual suffixes or suffixes marking the clausal position of a word, Klamer 2014: 141–43).

There are affixes which have invariant vowels: /e/ in possessor prefixes attaching to alienable nouns (see Table 7), and /a/ in object prefixes attaching to a particular (lexical) class of verbs (class II in Table 8). Historical comparative evidence indicates that prefixes with these vowels are

retentions of prefixes that marked possessors (with theme vowel /e/) and objects (with theme vowel /a/) in proto-Alor Pantar (Klamer & Kratochvíl 2018). The modern “disharmonic” affixes in Kaera are thus reflexes of the original system, while the Kaera prefixes that harmonize with the root vowel are an innovation.

5 Conclusions

In the enormous group of Papuan languages, canonical vowel harmony is relatively rare, and the attested patterns are diverse. In Amele and Umbu-Ungu harmony applies to all vowels within the word domain. In Mian, there is harmony affecting a set of pronouns. Mian also has harmony, but this is limited to the subject suffix and the preceding deontic affix *-mV* of verbs in the deontic mood. In Ngkolmpu, Komnzo, and Kaera, harmony does not apply to all vowels in the word.

In Ngkolmpu and Umbu-Ungu we find harmony of one or two phonetic features: in Ngkolmpu there is agreement along the front-back axis, in Umbu-Ungu there is agreement along the high-low and front-back axis. In the other languages discussed here, there is total harmony. While the direction of the harmony in most of the cases discussed here is leftwards, it is rightwards in Umbu-Ungu, and Amele displays harmony in both directions. The vowel triggering the harmony is part of the lexical root (a noun or a verb) in Ngkolmpu, Mian, Umbu-Ungu, and Kaera. In Mian and Komnzo, the trigger vowel is part of a functional (not lexical) item. Mian also has lexical items triggering vowel harmony in their prefix: verb roots with the vowel /e/. If a verb root is a zero form, the harmony trigger vowel comes from the suffix. In Amele, harmony in the verbal domain is triggered by vowels in functional (pronominal, tense and infinitive) affixes, targeting the other affixes in the word, while harmony in the nominal domain is triggered by noun stem vowels and targets certain possessive prefixes. Vowel harmony in Umbu-Ungu can spread beyond the morphological word, to include phrasal enclitics such as determiners and markers flagging the grammatical function of actors. Vowel harmony is partly related to epenthesis and unspecified vowels in Amele.

Some of the processes discussed in this chapter appear to be phonologically conditioned morphological, sometimes lexical, alternations (e.g. the examples from Ngkolmpu and Umbu-Ungu). In many cases there is a phonologically underspecified vowel in an affix, which is realized in harmony with some feature(s) filled in based on the context, indicating that VH operates at the phonology-morphology interface.

6 Acknowledgements

Many thanks to Mae (Matthew) Carroll, Don Daniels and René van den Berg for pointing me towards additional sources. Thanks also to the reviewers and editors for their suggestions and feedback.

7 References

- Blevins, Juliette, & Andrew Pawley. 2010. Typological implications of Kalam predictable vowels. *Phonology* 27: 1–44.
- Anceaux, Johannes C. 1965. *The Nimboran language: Phonology and morphology*. 's-Gravenhage: Martinus Nijhoff.
- Carroll, Matthew J. 2016. *The Ngkolmpu language, with special reference to distributed exponence*. PhD dissertation: The Australian National University, Canberra.
- Döhler, Christian. 2018. *A grammar of Komnzo*. Berlin: Language Science Press.
- Evans, Nicholas, Wayan Arka, Matthew Carroll, Yun Jung Choi, Christian Döhler, Volker Gast, Eri Kashima, Emil Mittag, Bruno Olsson, Kyla Quinn, Dineke Schokkin, Philip Tama, Charlotte van Tongeren & Jeff Siegel. 2018. The languages of Southern New Guinea. In Bill Palmer (ed.), *The languages and linguistics of the New Guinea area: A comprehensive guide*, 641–774. Berlin & New York: De Gruyter Mouton.
- Fedden, Sebastian. 2011. *A grammar of Mian*. Berlin & New York: De Gruyter Mouton.
- Foley, William A. 1986. *The Papuan languages of New Guinea*. Cambridge: Cambridge University Press.
- Hammarström, Harald, & Sebastian Nordhoff. 2012. The languages of Melanesia: Quantifying the level of coverage. In Marian Klamer & Nicholas Evans (eds.), *Melanesian languages on the edge of Asia: Challenges for the 21st Century*, 13–34. (Language Documentation & Conservation 5.) Honolulu: University of Hawai'i Press.
- Head, June. 2011. *A grammar of Umbu-Ungu*. Online version. URL: https://www.sil.org/system/files/ reapdata/54/49/05/5449059757129274137603713331026242037/Umbu_Ungu_Final.pdf.
- Holton, Gary, & Marian Klamer. 2018. The Papuan languages of East Nusantara and the Bird's Head. In Bill Palmer (ed.), *The languages and linguistics of the New Guinea Area: A comprehensive guide*, 569–640. Berlin & New York: De Gruyter Mouton.
- Holton, Gary, Marian Klamer, František Kratochvíl, Laura C. Robinson, & Antoinette Schapper. 2012. The historical relations of the Papuan languages of Alor and Pantar. *Oceanic Linguistics* 51: 86–122.
- Hulst, Harry van der. 2018. *Asymmetries in vowel harmony. A representational account*. Oxford: Oxford University Press.
- Inkelas, Sharon. 1993. Nimboran position class morphology. *Natural Language and Linguistic Theory* 11: 559–624.
- Klamer, Marian. 2014. Kaera. In Antoinette Schapper (ed), *The Papuan Languages of Timor, Alor and Pantar: Sketch Grammars 1*: 97–146. Berlin & New York: De Gruyter Mouton.
- Klamer, Marian, & František Kratochvíl. 2018. The evolution of differential object marking in Alor-Pantar languages. In Ilja Seržant & Alena Witzlack-Makarevich (eds.), *The diachronic typology of differential argument marking*, 70–95. Berlin: Language Science Press.
- Palmer, Bill, ed. 2018. *The languages and linguistics of the New Guinea Area: A comprehensive guide*. Berlin & New York: De Gruyter Mouton.

- Pawley, Andrew, & Harald Hammarström. 2018. The Trans New Guinea family. In Bill Palmer (ed.), *The languages and linguistics of the New Guinea area: A comprehensive guide*, 21–195. Berlin & New York: De Gruyter Mouton.
- Roberts, John R. 1987. *Amele* (Croom Helm Descriptive Grammars Series). London: Croom Helm.
- Roberts, John R. 2016. *Amele RRG grammatical sketch*. Online publication. SIL International. URL <https://rrg.caset.buffalo.edu/rrg/amelerrg.pdf>.
- Ross, Malcolm. 2005. Pronouns as preliminary diagnostic for grouping Papuan languages. In Andrew Pawley, Robert Attenborough, Jack Golson, & Robin Hide (eds.), *Papuan pasts: Cultural, linguistic and biological histories of Papuan-speaking peoples*, 15–65. (Pacific Linguistics 572). Canberra: Research School of Pacific & Asian Studies, Australian National University.

Abbreviations

1	first person
2	second person
3	third person
A	actor
ABL	ablative case
ABS	absolutive
ACT	actor
ALL	allative case
AN	animate
ART	article
AUX	auxiliary
CHAR	characteristic case
CL	class
DAT	dative
DECL	declarative
DEONT	deontic
DIA	diathetic
DPST	distant past
EMPH	emphatic
EP	epenthetic vowel
ERG	ergative
EXCL	exclusive
FEM	feminine
FIN	final
HOD	hodiernal past
INCL	inclusive
INS	instrumental case
IRR	irrealis
LONG	shape classifier

M(ASC)	masculine
MED	medial demonstrative
MID	middle
N1	neuter1
NAN	non animate
O	object
PFV	perfective
PL	plural
POSS	possessive
PRS	present
REAL	realis
RECOG	recognitional pronoun
RS	restricted stem
SBJ	subject
SG	singular
U	undergoer