Ende

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Ende (ISO639-3 code: kit) is a Pahoturi River language spoken by at least 600 (Eberhard, Simons & Fennig 2019) and as many as 1000 (Dareda 2016) people in Western Province, Papua New Guinea, primarily in the villages of Limol, Malam, and Kinkin, as shown in Figure 1. The Pahoturi River family, which also includes the Agob, Em, Idi, Kawam, and Taeme language varieties, has not yet been demonstrated to be related to any other language family and is thus classified as Papuan due to its geographical location. As with many languages in the region, the name of the language, *Ende* /ende/ [ʔende], is the Ende word meaning 'what'.

Multilingualism is common among Ende speakers, arising from a sister-exchange marriage tradition, which results in many women and men marrying into the community from other linguistic backgrounds. In addition to one or more neighboring local languages, especially Taeme and Kawam, many Ende speakers also speak English, which is the regional *lingua franca* used in education and religion. Tok Pisin is a lesser-known contact language and is primarily spoken by people who have spent time outside of southern Western Province. In Limol, Ende is the primary language in most domains of interaction except for schooling, which is conducted in both English and Ende at the elementary level and solely in English afterward.

The data for this illustration were collected in Limol village between 2015 and 2018. To illustrate the diverse range of Ende speech, I analyzed the speech of 16 Ende speakers[1] (for demographic information, see Lindsey 2019: 146). This sample is balanced in terms of gender (eight men and eight women) and age (four speakers each under 30, 30–45, 46–61, and 62 and older). The phonetic analysis of the consonants and vowels, as described below, was based primarily on these recordings, in supplementation with 11 months of community observation and ongoing analysis of the Ende Language Corpus (Lindsey 2015).

All of the examples of the Ende language in this illustration are represented in writing in three ways: an orthographic[2] representation (in *italics*), a phonemic transcription (in /slashes/), and a narrow phonetic transcription of the accompanying audio recording (in [brackets]).

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[1] These speakers are listed here alongside the data that they contributed, which can be accessed through the references: Paine Kurupel (P. Kurupel 2018), Donae Kurupel (D. Kurupel 2018), Sarbi Kurupel (S. Kurupel 2018), Karea Mado (Mado 2018), Warama Kurupel (Suwede) (Kurupel (Suwede) 2018a, b), Kaoga Dobola (Dobola 2018), Kwale Geser (K. Geser 2018), Wagiba Geser (W. Geser 2018a, b, c), Tonny (Tonzah) Warama (T. Warama 2018a, b), Jerry Dareda (Dareda 2018), Gloria Warama (Kurupel) (Warama (Kurupel) 2018), Namaya Karea (Karea 2018), Wendy Frank (Frank 2018), Winson Warama (W. Warama 2018), Maryanne Sowati (Kurupel) (Sowati (Kurupel) 2018), and Andrew Kaoga (Dobola) (Kaoga (Dobola) 2018a).

[2] The Ende orthography was developed by the Ende Language Project, namely Ende speakers Warama Kurupel (Suwede), Wagiba Geser, and Tonny (Tonzah) Warama in collaboration with the Lewada Bible Translation Center. Many graphemes represent their homologous counterparts in the International Phonetic Alphabet, but non-transparent graphemes may be converted as follows: <a> /ɐ/, <ä> /ʌ/, <i> /ə/, <dd> /ɖʐ/, <ll> /ɽ/, <ng> /ŋ/, <ny> /ɲ/, <r> /ɾ/, <tt> /ʈʂ/, <y> /ʝ/. The grapheme <e> represents both the phoneme /e/ and post-vocalic /j/.
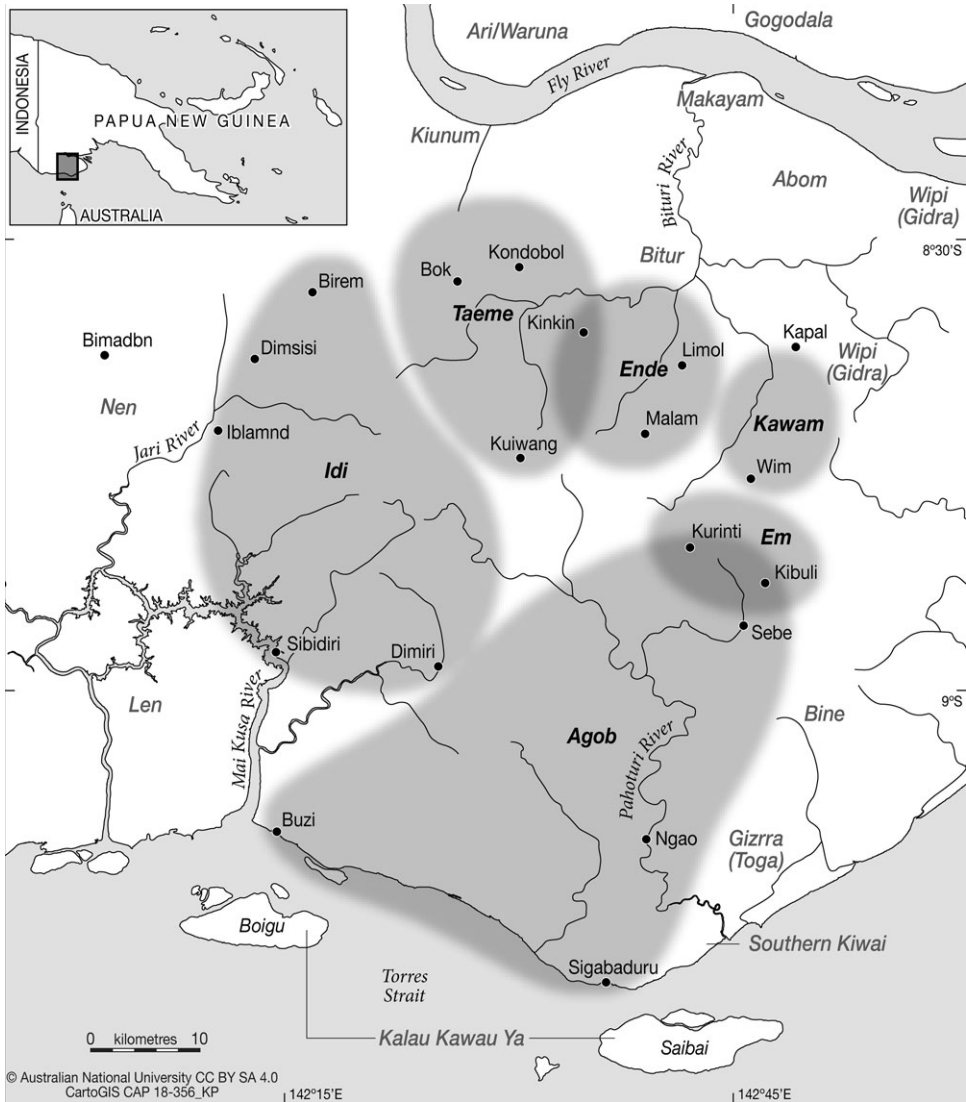
Figure 1 South Fly villages with predominant Pahoturi River speaker populations.

Consonants

	Bilabial	Alveolar	Retroflex	Palatal	Velar	(Labial velar)
Plosive	p b	t d			k g	
Affricate			t͡ʂ d͡ʐ			
Nasal	m	n		ɲ	ŋ	
Fricative		s z				
Tap or flap		ɾ	ɽ			
Approximant				j	w	
Lateral approximant		l				

There are 19 phonemic consonants in Ende. In the table above, a symbol from the International Phonetic Alphabet was chosen to symbolize each phonemic category. Each category represents a wide range of inter- and intra-speaker phonetic variation, which will be described in this article. For example, the voiceless retroflex affricate symbol /t͡ʂ/ represents the phonemic category that is expressed by a range of phonetic realizations including [t͡ʂ], but also a postalveolar [t͡ʃ], a postalveolar [t͡ʃ̣], or even a non-affricated [ʈ].

The tables below present each consonant in word-initial, word-medial, and word-final positions in near-minimal pairs. To the greatest extent possible, each consonant is preceded or followed by the low, central vowel /ɐ/ (transcribed throughout this paper with the symbol for the low-front vowel /a/ for readability).

Consonants in word-initial position

PHONEME	PHONEMIC [PHONETIC]	ORTHOGRAPHIC	GLOSS
p	pa	*pa*	'bird'
b	bab	*bab*	'yam type'
t	tatu	*tatu*	'wash'
d	dada	*dada*	'older sibling'
k	kab	*kab*	'rope'
g	gaguma [gaɰuma]	*gaguma*	'yamhouse'
t͡ʂ	t͡ʂam	*ttam*	'leaf'
d͡ʐ	d͡ʐapaʈ	*ddapall*	'sky'
m	ma	*ma*	'house'
n	nag	*nag*	'friend'
ɲ	ɲʌŋ	*nyäng*	'bag'
ŋ	ŋam	*ngam*	'breast'
s	sana [sanʌ]	*sana*	'sago'
z	za	*za*	'thing'
ɾ [3]	ɾuɾiɾuɾi	*ruriruri*	'earthquake'
ʈ	ʈa	*lla*	'person'
l	laimnin	*laemnin*	'argue'
j	jaj	*yae*	'mother'
w	waɽe	*walle*	'river'

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[3] Marginal: very few words begin with /ɾ/ in Ende.

Consonants in word-medial position

PHONEME	PHONEMIC [PHONETIC]	ORTHOGRAPHIC	GLOSS
p	papa	*papa*	'hit'
b	baba	*baba*	'father'
t	matamata	*matamata*	'tree type'
d	adawa͡ʈʂa [ʔadawa͡ʈʂa]	*adawatta*	'because'
k	kakab	*kakab*	'leftover'
g	daga [daga̱]	*daga*	'tree type'
t͡ʂ	ma͡ʈʂa	*matta*	'shoulder'
d͡ʐ̣	kiad͡ʐ̣ad͡ʐ̣a	*kiyaddadda*	'bird type'
m	mamamamaŋ	*mamamamang*	'pink'
n	sana	*sana*	'sago
ɲ	paɲa	*panya*	'pineapple'
ŋ	kilikiliaŋaj	*kilikiliangae*	'happily'
s	masaɾ	*masar*	'grandfather'
z	zazaba	*zazaba*	'bag type'
ɾ	paɾa	*para*	'challenge'
ʈ	maʈa	*malla*	'not'
l	malam	*malam*	'obey'
j	aja	*aya*	'who'
w	bawa	*bawa*	'rainy season'

Consonants in word-final position

PHONEME	PHONEMIC [PHONETIC]	ORTHOGRAPHIC	GLOSS
p	tap [ta͡p]	*tap*	'yam type'
b	tab	*tab*	'promise'
t	pat	*pat*	'taro type'
d	omad	*omad*	'friend'
k	kak	*kak*	'grandmother'
g	ag	*ag*	'morning'
t͡ʂ	t͡ʂat͡ʂ [t͡ʃætʃ]	*ttatt*	'jaw'
d͡ʐ̣	d͡ʐ̣ad͡ʐ̣ [d͡ʐ̣ad]	*ddadd*	'tree type'

m	mamam	*mamam*	'red'
n	tan	*tan*	'broom'
ɲ	aɲ	*any*	'something'
ŋ	mamamamaŋ	*mamamamang*	'pink'
s	as [ʔas]	*as*	'banana type'
z	ziz	*ziz*	'insect'
ɾ	masaɾ	*masar*	'grandfather'
ʈ	t͡ʂaɽ [t͡ʃaɻ]	*ttall*	'wallaby'
l	jal	*yal*	'tree type'
j	naj	*nae*	'sweet potato'
w	aw [aʊ]	*ao*	'yes'

Plosives

Voiced and voiceless plosives contrast at the bilabial, alveolar, and velar places of articulation. (Note that retroflex/postalveolar plosives occur in the data and are analyzed as allophones of the retroflex affricates, see below.) The voiceless plosive /t/ is consistently articulated with the tongue behind the teeth but appears to vary between a dental (apical) or alveolar (laminal) articulation.

The voiceless plosives and affricates have short voice onset times (VOTs) in word-initial position, indicating very minimal aspiration for /p/ and /t/ and light aspiration for /k/. On the other hand, the voiced plosives and affricates feature considerable prevoicing in word-initial position. This two-way laryngeal contrast classifies Ende as a 'true voice' language, like Russian, French, Dutch, or Hungarian (Ringen & Kulikov 2012: 270).

Prevoicing durations for voiced plosives vary greatly across tokens. An analysis of voice onset times across 18 words as spoken by four speakers three times each (N = 216) revealed that VOTs of voiceless plosives (measured from the burst release to the onset of voicing of the vowel) exhibit less variation than VOTs of voiced plosives (measured from the onset of voicing to the burst release), see standard deviation values in Table 1.

Table 1 Mean voice onset times for plosives.

Phoneme	Mean (ms)	Standard deviation	N
p	18.5	6.29	36
t	19.3	5.19	36
k	42.0	17.15	36
b	−106.9	40.90	36
d	−93.9	28.20	36
g	−89.6	37.30	36

However, although the duration of prevoicing varies greatly before voiced plosives, this variation is also observed within tokens of the same word (e.g. for *bawa* 'rainy season', max = −187 ms and min = −73 ms, see Figures 2 and 3). Thus, although the phonetic variation is stark, there is no evidence for a phonemic contrast in VOT length. Also notable in the VOT of Figure 3, is a complex waveform and formant structure – characteristics of prenasalization or 'nasal venting' (Kharlamov 2018: 216).
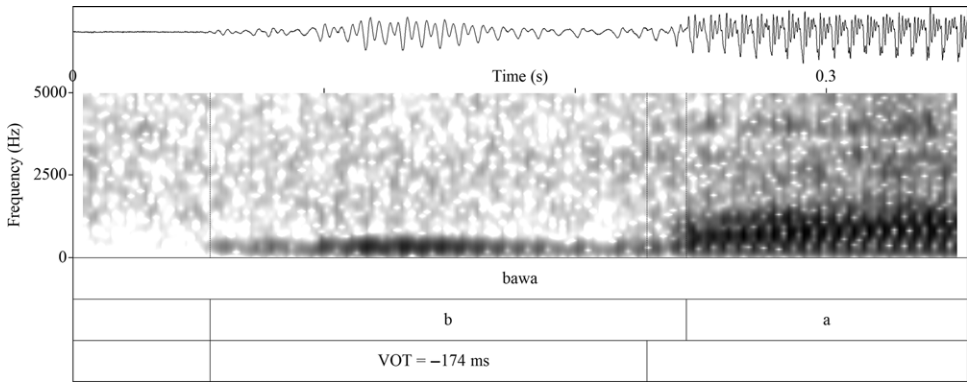
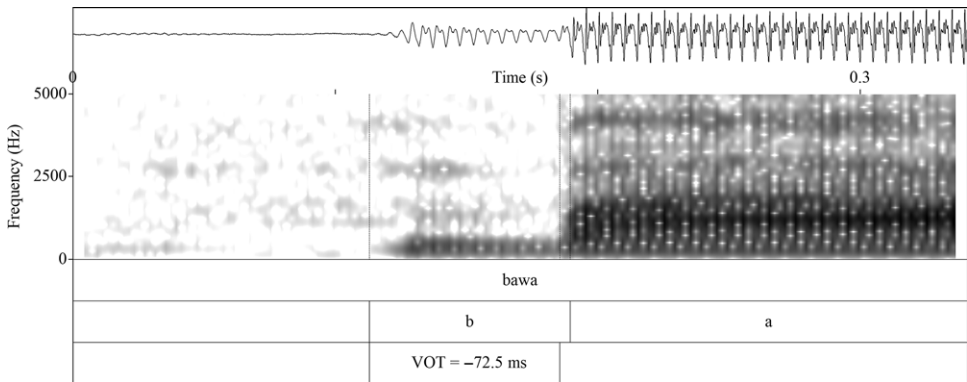**Figure 2** Voice onset time of /b/ in *bawa* 'rainy season', –174 ms (D. Kurupel 2018: 41).

Figure 3 Voice onset time of /b/ in *bawa* 'rainy season', –72.5 ms (Frank 2018: 41).
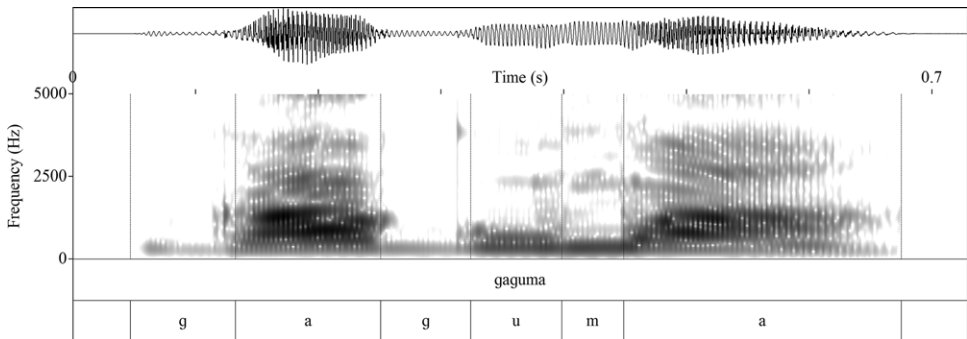

Figure 4 Stopped variant of intervocalic /g/ (P. Kurupel 2018).

All six plosive phonemes occur in word-initial, word-medial, and word-final positions though the voiceless phonemes are more frequent, especially word-finally. In intervocalic positions, voiced plosives are variably lenited. Compare *gaguma* /gaguma/ 'yamhouse' in Figure 4 (stopped: [gaguma]) and Figure 5 (lenited: [gaɰuma]).

In final position, consonants are often released with an anaptyctic vowel of central quality (e.g. *käp* /kʌp/ [kʌpʌ] 'fruit' and *gwem* /gwem/ [gwɛmʌ] 'river part').
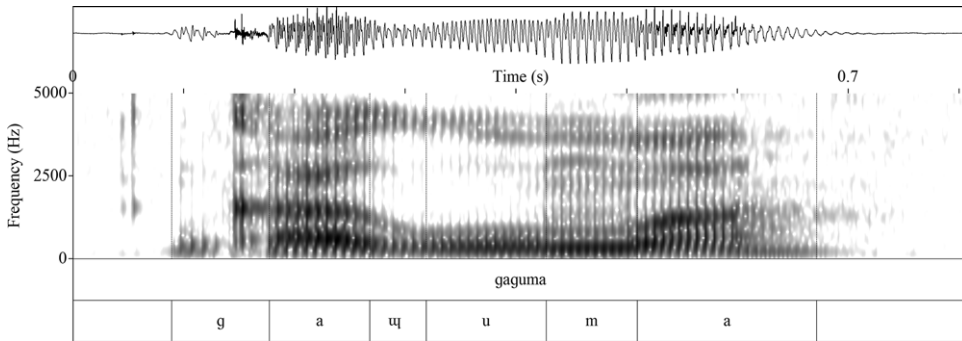
Figure 5 Lenited variant of intervocalic /ɡ/ (Kaoga (Dobola) 2018a).

Notable absences from the plosive inventory include the labial-velar plosives present in other Pahoturi River languages, such as Idi (/k͡w ~ k͡pʷ ɡ͡bʷ/), and Yam languages such as Nmbo and Nen (/k͡pʷ ɡ͡bʷ/; Evans & Miller 2016, Ellison et al. 2017). Ende cognates with Idi words that begin with /k͡w ~ k͡pʷ ɡ͡bʷ/ are realized as /k ɡ/ and are often (but not always) followed by a rounded vowel.

There are a limited number of words in the Ende lexicon that include onsets with /kw/ or /ɡw/, such as *kwi* 'island' and *gwem* 'river part'. This sequence is never followed by a rounded vowel. One could analyze these /kw/ and /ɡw/ sequences as monosegmental phonemes (/kʷ/ and /ɡʷ/) or as sequences of phonemes, as I have done. Support for the complex onset hypothesis comes from the fact that Ende allows other complex onsets with plosives and glides. The bilabial plosives /p/ and /b/ can also precede /w/ in initial position. Moreover, plosives form complex onsets with the other phonemic glide /j/. Examples are shown in the table below.

Plosive-glide sequences in word-initial and word-medial positions

Sequence	Phonemic [Phonetic]	Orthographic	Gloss
kw	kwi	*kui*	'island'
gw	gwem [ɡwɛmʌ]	*guem*	'river part'
pw	pwapwa	*puapua*	'light'
pw	pwikme [pwikʌme]	*puikme*	'lizard type'
bw	bwitu	*buitu*	'stick'
bw	bwid͡ʒe [bwid͡ʒe]	*buidde*	'tool type'
bw	sambwag	*sambuag*	'prawn'
kj	kjakja	*kyakya*	'bird type'
bj	pimbjom	*pimbyom*	'bark type'

For now, I will analyze /kw/, /ɡw/, /pw/, /bw/, /kj/, and /bj/ as complex onsets, although they may have a monosegmental origin.

Ende's plosive inventory also differs from related Idi and nearby Yam languages, such as Nmbo, Nen (Evans & Miller 2016), Nama, and Ngkolmpu (Carroll 2016), in that while linguists report voiced prenasalized plosives (/ᵐb ⁿd ᵑɡ ᵑɡ͡bʷ/) for Idi, Nmbo, Nen, and Nama, and voiceless prenasalized obstruents (/ᵐp ⁿt ᵑk ⁿs/) for Ngkolmpu, I do not report any

prenasalized phonemes in Ende's inventory. I hesitate to distinguish Ende in this way because the candidates for prenasalized phonemes in Ende (/mp mb nt nd ŋk ŋg n͡ts͡ n͡d͡z ns nz/) appear to be both phonetically and phonotactically similar to the 'prenasalized consonants' reported in Idi, Nmbo, and Nen. However, the distribution and behavior of these candidates do not provide adequate evidence for rejecting the hypothesis that they are sequences of phonemes, as has been done for languages with substantiated phonemic prenasalization, such as nearby Komnzo (Döhler 2018), Ngkolmpu (Carroll 2016), and Coastal Marind (Olsson 2017).

The following tables illustrate these nasal–obstruent sequences in word-medial and word-final position with a preceding or following low, central /ɐ/. These sequences do not appear contrastively in word-initial position, although several experts have noted that the significant prevoicing of some voiced obstruents sounds in word-initial positions contains complex waveforms and formant structure: evidence of prenasalization.

Nasal–obstruent sequences in word-medial position

SEQUENCE	PHONEMIC [PHONETIC]	ORTHOGRAPHIC	GLOSS
mp	dompa [dompa̠]	*dompa*	'spear type'
mb	amba [ambʌ]	*amba*	'tree type'
nt	tanteŋ	*tanteny*	'tree type'
nd	panda	*panda*	'tree type'
ŋk	daŋkam	*dangkam*	'I leaned'
ŋg	saŋga	*sangga*	'bird type'
n͡ts͡	wan͡ts͡awan͡ts͡a [wan͡ts͡awan͡ts͡a̠]	*wanttawantta*	'game type'
n͡d͡z	d͡z͡ond͡z͡o	*ddonddo*	'to be proud'
ns	nanserbe	*nanserbe*	'I prepared'
nz	ŋanzig [ŋanz̠ig]	*nganzig*	'to overtake'

Nasal–obstruent sequences in word-final position

SEQUENCE	PHONEMIC [PHONETIC]	ORTHOGRAPHIC	GLOSS
mb	bʌnamb	*bänamb*	'to open'
nd	band	*band*	'tree type'
ŋk[4]	nʌŋk	*nängk*	'take (it) off'
ŋg	penaŋg	*penangg*	'to burn'
n͡d͡z	mʌn͡d͡z͡mʌn͡d͡z͡ [mʌn͡d͡z͡ʌmʌn͡d͡z͡]	*mänddmändd*	'to drown'
nz	bʌnz [bʌnzʌ]	*bänz*	'mosquito'

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[4] Marginal: very few words end with nasal-obstruent sequences in which the final consonant is voiceless.

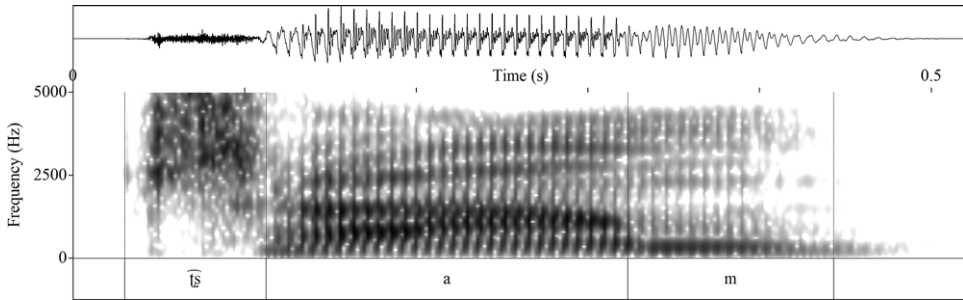**Figure 6** Spectrogram of *ttam* 'leaf' with characteristic low F3 dip (2153 Hz) during the transition from the plosive (Kaoga (Dobola) 2018a).

Affricates and fricatives

There are two retroflex affricates, /ʈʂ/ and /ɖʐ/, and two alveolar fricatives, /s/ and /z/. The voiced affricates and fricatives are fully voiced in all positions, often with significant prevoicing, as detailed earlier for the voiced plosives.

Retroflex obstruents are atypical of Papuan languages in general (Foley 2000) and bring more to mind languages further south in Australia (Evans 2012). Regionally, retroflex obstruents are more common. They can be found in all Pahoturi River languages, except perhaps Kawam, in which they have been replaced by palatal fricatives (Badu 2018). Retroflex plosives can also be reconstructed for the Yam family (Evans, Carroll & Döhler 2017). These retroflex affricates can be found in all positions of the syllable and the word. The degree of retroflexion apparent in acoustic analyses is weak. Further articulatory evidence is necessary for saying anything more specific about the shape of the tongue for these sounds. The retroflexes are notably distinguished from /t͡ʃ/ (found in loanwords, such as *change*, *church*, *teacher*, and *chip* 'chief') and [d͡ʒ] (an allophonic variant of /z/, and found in loanwords such as *pidgin* 'Tok Pisin').

The retroflex affricates undergo considerable allophonic variation, both in manner and place. With regards to manner, the corpus includes numerous examples of the affricates being realized as plosives or as fronted fricatives (e.g. listen to the fronted [ʒ] or [z] in *ddone* /ɖʐone/ [ʒone] 'no' and *kumuddäga* /kumuɖʐʌga/ [kumʒʌga] 'three' as spoken by Wendy Frank, Ende woman, age 28). A variationist analysis of retroflex affricate tokens within recordings of natural speech demonstrates that these retroflex consonants are more likely to be realized as plosives when produced by speakers who perform *kawa*, a prestigious style of oration within the Ende community (Strong, Lindsey & Drager 2020). Strong and colleagues go on to show that among the orators, older speakers and women are more likely to produce these consonants as plosives compared with younger speakers and men.

With regards to place, these affricates vary from a retroflex articulation with expected low third formant (F3) values transitioning into the plosive (see Figure 6 and listen to *ttam* /ʈʂam/ 'leaf', *ddapall* /ɖʐapaɽ/ 'sky', *wanttawantta* /wanʈʂawanʈʂa/ 'game type', and *ddonddo* /ɖʐonɖʐo/ 'to boast'), and a postalveolar without any F3 dips (e.g. [t͡ʃ], see Figure 7), sometimes even with hints of a postalveolar rhotic (like in the English *tree* [t̺ɹi̥]). Informal observations indicate that younger women are producing more fronted variants than their older or male counterparts, suggesting this may be a change in progress.

There are two fricatives /s/ and /z/. Both are comparatively rare phonemes within the corpus. The phoneme represented as /z/ exhibits considerable phonetic variation, which has been observed for this phoneme across the southern New Guinea region. In Ende, /z/ is variably realized as an alveolar fricative [z], an alveolar affricate [d͡z], a retracted alveolar
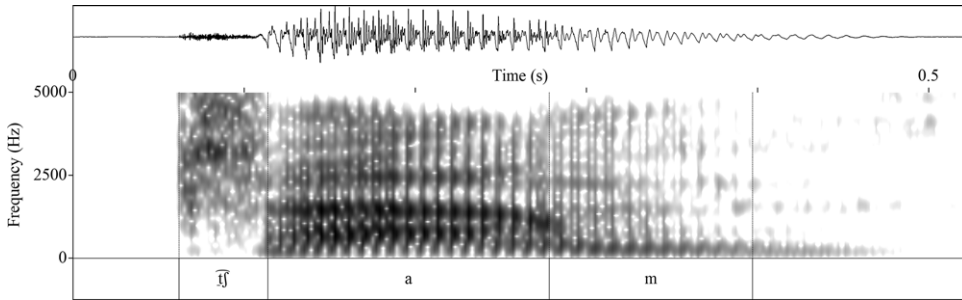
Figure 7 Spectrogram of *ttam* 'leaf' with stable F3 (2399 Hz) in the transition from the plosive (Kaoga (Dobola) 2018a).

affricate [d͡z̠], a retracted alveolar fricative [z̠], or a postalveolar affricate [d͡ʒ]. Thus, the word /pazi/ 'year' can be pronounced in at least five different ways. More articulatory data is needed.

Variable pronunciations of /pazi/

ALLOPHONE	PHONETIC	ORTHOGRAPHIC	GLOSS	SPEAKER	REFERENCE
z	[pazi]	*pazi*	'year'	MSK	(Sowati (Kurupel) 2018)
d͡z	[pad͡zi]	*pazi*	'year'	NKK	(Karea 2018)
d͡z̠	[pad͡z̠i]	*pazi*	'year'	GWK	(Warama (Kurupel) 2018)
z̠	[paz̠i]	*pazi*	'year'	TTW	(T. Warama 2018a)
d͡ʒ	[pad͡ʒi]	*pazi*	'year'	KMM	(Mado 2018)

Nasals

Nasals contrast at four places of articulation: bilabial, alveolar, palatal, and velar. The palatal and velar nasals are atypical for non-Austronesian languages in New Guinea (Foley 2000) but common in Austronesian (Blust 2013). This set of nasals can be found in all Pahoturi River languages. Nasal consonants can be found in all positions of the word and syllable. Velar nasals undergo optional deletion in word-initial position.

Liquids

The Ende inventory includes three liquids: an alveolar tap /ɾ/, a retroflex flap /ɽ/, and an alveolar lateral approximant /l/. Ende lacks the palatal lateral approximant /ʎ/ found in Idi and Taeme, which is realized as /ɽ/ or /l/ in cognates (Evans, Lindsey & Schokkin 2019).

Unlike the other consonant categories, the liquid consonants are not evenly distributed across phonological contexts. Among the liquids, /ɽ/ is most common word-initially, inter-vocalically, and word-finally, although /ɾ/ approaches the count of /ɽ/ inter-vocalically. The distribution of liquids is more similar in complex onsets and codas, although they are far more common in onsets than in codas. The counts in Table 2 are based on the 2017 Ende dictionary, which included approximately 5000 words.

As with the retroflex affricates, the retroflex flap also often has weak retroflexion in its articulation. The following figures provide a near-minimal triplet contrasting intervocalic /ɽ/ with clear retroflexion (Figure 8), less-clear retroflexion (Figure 9), and the alveolar tap (Figure 10).

Table 2 Distribution of liquids across phonological contexts.

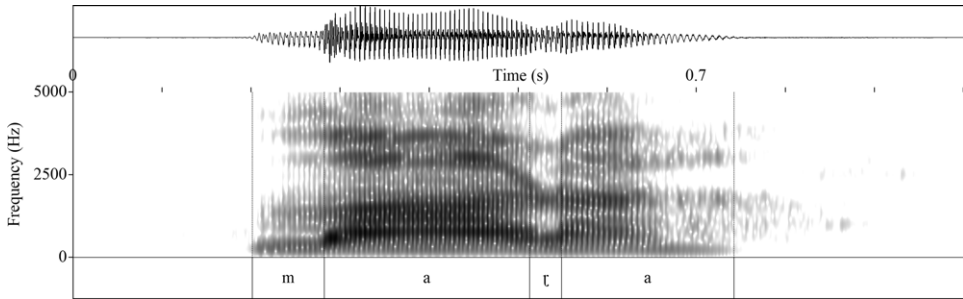| Liquid	Word-initial	Intervocalic	Word-final	Onset cluster	Coda cluster	Total
/ɽ/	114 (15.7%)	348 (48.0%)	220 (30.3%)	41 (5.7%)	2 (0.3%)	725
/ɾ/	17 (3.3%)	298 (58.3%)	147 (28.8%)	48 (9.4%)	1 (0.2%)	511
/l/	26 (7.9%)	131 (39.8%)	145 (44.1%)	24 (7.3%)	3 (0.9%)	329

Figure 8 Spectrogram of *malla* 'not' with a clear F3 dip before the retroflex flap (Warama (Kurupel) 2018).
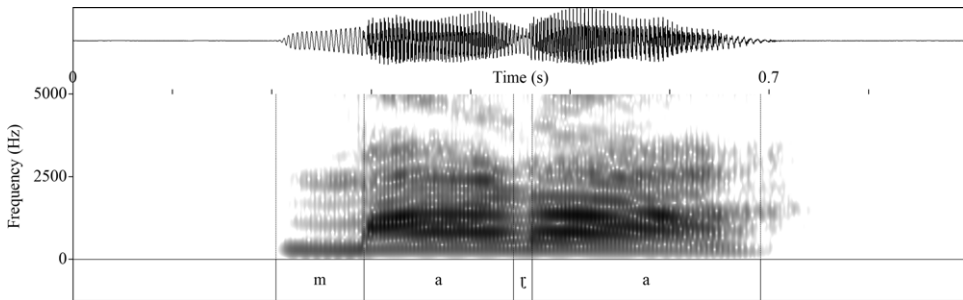

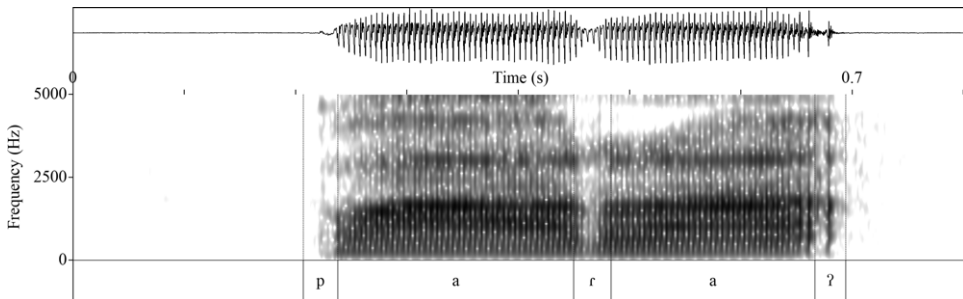**Figure 9** Spectrogram of *malla* 'not' with stable F3 contour before the retroflex flap (P. Kurupel 2018).

Figure 10 Spectrogram of *para* 'yam-counting ceremony' with no apparent F3 dip before the alveolar tap (Frank 2018).

Glides

There are two glides or semi-vowels in the Ende consonant inventory: /w/ and /j/. These glides occur in word-initial and syllable-initial positions, as illustrated with contrastive minimal pairs in the tables below. In word-final position, speakers prefer to write these sequences of vowel and glide as diphthongs (e.g. *ao* /aw/ [a̯ʊ] 'yes' and *mae* /maj/ [maə] 'sago type'). However, they behave like word-final consonants in cliticization contexts.

Glides in word-initial position with minimal pairs

PHONEME	PHONEMIC [PHONETIC]	ORTHOGRAPHIC	GLOSS
w	wap [uap]	*wap*	'stick'
	ap [ʔap̚]	*ap*	'savannah'
j	juɾe	*yure*	'sago type'
	uɽe	*ulle*	'big'

Glides in inter-vocalic position with minimal pairs

PHONEME	PHONEMIC [PHONETIC]	ORTHOGRAPHIC	GLOSS
w	bawa [bawaʔ]	*bawa*	'rainy season'
	baba	*baba*	'father'
j	aja	*aya*	'who'
	aɽa	*alla*	'how'

Glides in word-final position with minimal pairs

PHONEME	PHONEMIC [PHONETIC]	ORTHOGRAPHIC	GLOSS
w	aw [a̠ʊ̯]	*ao*	'yes'
	a [aʔ]	*a*	'and'
j	maj [maə]	*mae*	'sago type'
	ma	*ma*	'house'

These glides are also used epenthetically. Their epenthetic function is to provide onsets to words beginning in non-low vowels and to break up vowel sequences. Typically, the front glide precedes word-initial front vowels /i/ and /e/, while the back glide precedes word-initial back vowels /o/ and /u/.
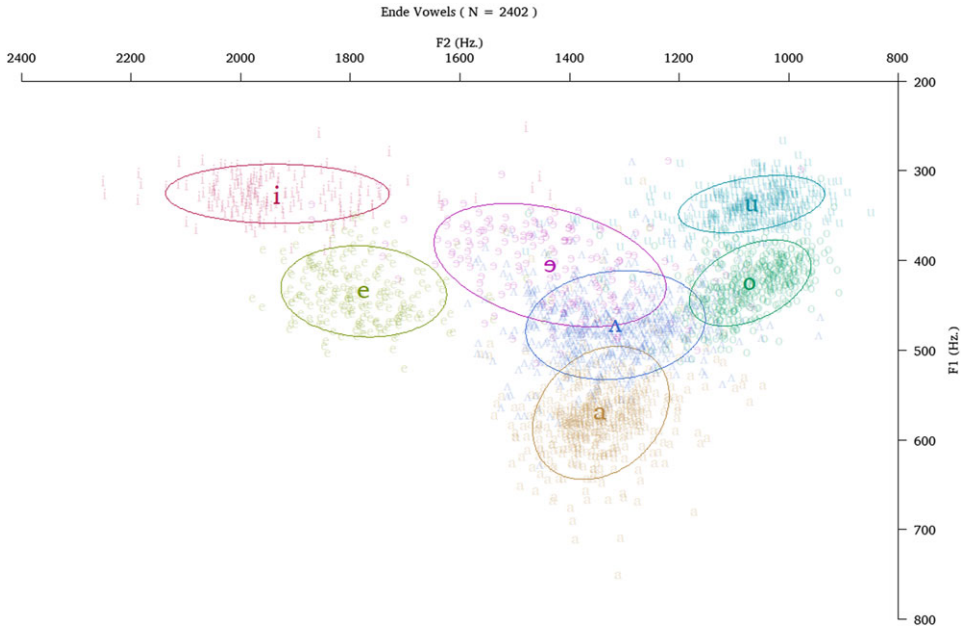
Vowels
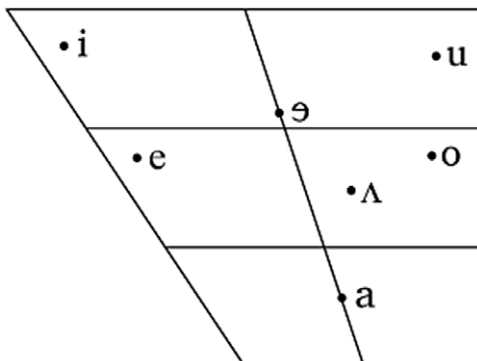
Figure 11 (Colour online) Plot of normalized F1 versus F2 values of 2402 vowel tokens of 17 speakers (small vowel symbols). Ellipses indicate a 95% confidence interval variance from the mean (large vowel symbol).

Vowels in word-medial position

PHONEME	PHONEMIC [PHONETIC]	ORTHOGRAPHIC	GLOSS
i	bin	*bin*	'name'
e	bem	*bem*	'sea'
a	baba	*baba*	'father'
o	bodo	*bodo*	'full'
u	bun [bunʌ]	*bun*	'head'
ɘ	bɘtbɘt	*bɨtbɨt*	'black'
ʌ	bʌnz [bʌnzʌ]	*bänz*	'mosquito'

Ende has seven phonemic vowel qualities, including five peripheral vowels /i e a o u/ and two central vowels /ɘ ʌ/. The placement of the vowels in the vowel diagram above is approximated from the plot in Figure 11, in which the normalized F1/F2 measurements of 2402 vowel tokens spoken by 17 speakers (aforementioned 16 speakers with supplemental recordings from Musato Giwo (Giwo 2016)) are plotted. The plot below was made using the *phonR* package (McCloy 2016).

Ende's vowel inventory stands out in the Pahoturi River family because it has only one low open vowel /a/, while all other Pahoturi River varieties have two /æ/ and /a/.

The central vowels /ɘ/ and especially /ʌ/ have quite broad distributions throughout the center of the vowel space. The vowel represented by /ɘ/ is higher (closer) than both /e/ and /o/
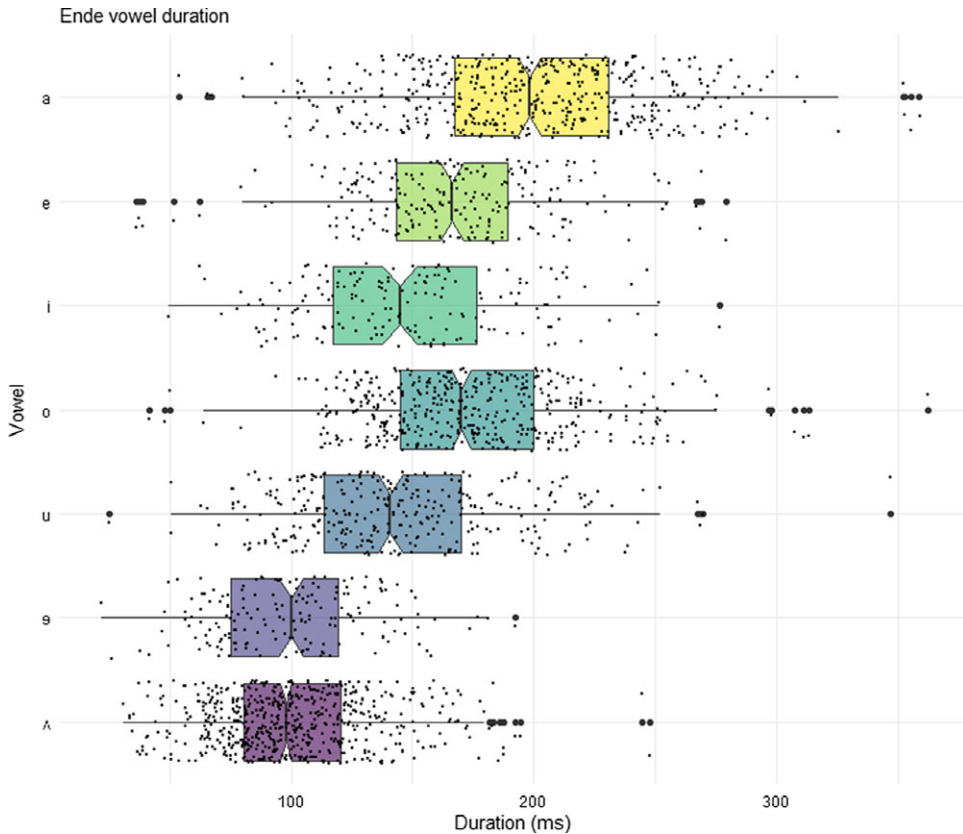
Ende vowel duration

Figure 12 (Colour online) Plot of duration values of 2402 vowel tokens of 17 speakers.

and participates as a high vowel in height-based vowel harmony (Lindsey 2019: 190). For this reason, I chose the symbol for the near-close, non-rounded vowel, /ə/. An alternative symbol would be /ɪ/.

The vowel represented by the symbol /ʌ/ is distributed somewhat lower (more open) than /e/ and /o/ but participates as a mid vowel in height-based vowel harmony. The vowel's distribution is central, not back, and also serves as a catch-all epenthetic, central vowel. For this reason, I chose the /ʌ/ symbol, although /ə/ may also be an appropriate choice.

Moreover, this analysis reveals a resemblance between the central vowels of Ende and the central vowels of nearby Nen (Evans & Miller 2016). In both languages, /ə/ and /ʌ/ can neither begin nor end words (except as anaptyctic vowels) but do contrast minimally with one another and with the peripheral vowels.

The central vowels also differ from the peripheral vowels in terms of length. As shown in Figure 12, the central vowels /ʌ/ and /ə/ are the shortest on average, followed by the high vowels /i/ and /u/, the mid vowels /e/ and /o/ and the low vowel /a/. In this plot, the notches display a confidence interval around the median values, the boxes represent the mid 50% of the data, the whiskers represent the minimum and maximum values, while the dots outside the whiskers represent statistical outlier values.

Note that vowels in word-initial and word-final positions are often preceded or followed by an audible glottal stop. Compare the two tokens of the word *aya* /aja/ in Figure 13, in which the first token features a smooth vowel onset, while the second token has an abrupt onset (glottal stop); both also end in a glottal stop.
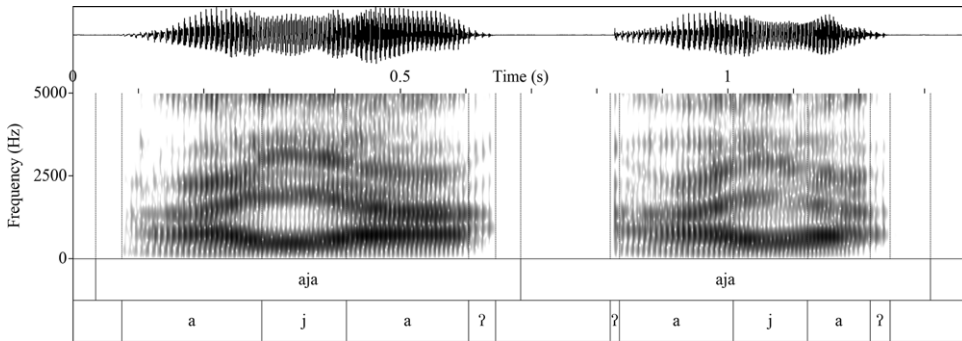
Figure 13 Two tokens of *aya* /aja/ without and with an initial glottal stop (Dareda 2018).

One vowel process of note is vowel harmony. Ende vowel harmony is progressive, can be triggered by prefixes, and following vowels alternate to harmonize in height (high or mid) with the preceding vowel (Lindsey 2019: 190). In this way, we observe alternations between /i ~ e/, /u ~ o/, and /ə ~ ʌ/. The low vowel /a/ blocks progressive vowel harmony.

Prosody

Ende does not have lexical stress or tone. There are no words in the current lexicon that minimally contrast by something like stress, and tonelessness is a typological feature of the region (Evans et al. 2018: 738).

Intonational frames are poorly understood in the language. Questions do not systematically end in a rising tune and are often falling, even though word order does not always indicate whether or not the utterance is a question or a statement. One interesting use of intonation is the Call-at-Distance form. This form is similar to the Nungon Call-at-Distance form observed by Sarvasy (2017a: 106–109; 2017b) and is used whenever the speaker is at a considerable distance or out of view from the intended recipient. The Call-at-Distance form is located at the end of an utterance and entails final vowel lengthening, the addition of /-oː/ or /-aj/, and a considerable rise in pitch and loudness, especially for questions (Jerry 2016a, b, c, d, e; W. Geser 2017). For example, the Call-at-Distance form for *mer ag* /meɾ ag/ 'good morning' is pronounced [meɾ agoː] at distance and *bongo ine ma we yaralle?* /boŋo ine ma we jaɾaɽe/ 'did you go to the well?' is pronounced [boŋo ine ma we jaɾaɽe aj] 'did you go to the well?' at distance.

Transcription of the recorded passage

The story of the North Wind and the Sun was translated into Ende by Andrew Kaoga (Dobola) (Kaoga (Dobola) 2018b). The text features some cultural adjustments; for instance, the North Wind is translated as *kämag* /kʌmag/ 'the West Wind', and the warm cloak is substituted with a *labalaba* /labalaba/ 'laplap, a piece of cloth tied around the waist'. The resulting story contains all phonemes except /ə/ and /z/. That is to say that this story represents 89.4% of the phoneme inventory. The text is also missing initial /i n ɲ s r/, medial /d͡z ɲ/, and final /b t k d͡z s r w/. In summary, the text captures 43 of 57 or 75.4% of expected phoneme positions. The text is presented below in a broad phonemic translation and an interlinear text with orthographic representation, word-level glosses, and phrase-level free translations into English.

Kämag a wa Yäbäd a (The West Wind and the Sun)

Andrew K. Dobola

Broad phonemic transcription

gudaj gudaj tʌrʌp me kʌmag a jʌbʌd a dejagernejo t͡soŋo jebdo me ubi oba mʌŋaɽ de gond͡zonejo kʌmag ŋʌmo mʌŋaɽ a uʈe dan jʌbʌd eka mu dʌgagʌn d͡zone ŋʌmo ade mʌŋaɽ a uʈe dan t͡soŋo tʌrʌp me ibiag a daɽnʌn bogo labalaba aʈe gokʌnewʌn kʌsre ada gogejo da ajja labalaba de bʌŋkʌnʌn obo pʌt͡s at͡s ede obo mʌŋaɽ a uʈe dan kʌmag aŋde obo wel de ŋat͡soŋ dajrʌŋʌn diba ʈa pate dapʌdojʌn duduweduduwemaŋ ada oba obo labalaba de bʌŋkʌnʌn be d͡zone dʌŋkʌnʌn dʌbe ʈa da obo labalaba de ɽokt͡saŋaj damɽamʌn kʌmag ɽʌt͡s gogʌn ada maɽa ŋʌna muɽdaj dan kʌsre jʌbʌd gobergabʌn t͡sʌnt͡sʌm pejaŋ jʌbʌd aŋde t͡sʌnt͡samaŋ abal gogon dʌbe ʈa da obo labalaba de dʌŋkʌnʌn t͡sʌnt͡sʌm at͡sa a memram a dʌgagʌn. kʌmag kilimiŋ gogon adawat͡sa jʌbʌd bo mʌŋaɽ a uʈe daja kʌmag ada gogon bʌne mʌŋaɽ a uʈe dan be ŋʌmo kʌlsre dan

Interlinearized text

The abbreviations in this passage are as follows: > = acting upon; 3 = third person; ABL = ablative; ACC = accusative; ALL = allative; ANIM = animate; AUX = auxiliary; COP = copula; DU = dual; DUR = durative; FUT = future; INST = instrumental; LOC = locative; NOM =nominative; POSS = possessive; PRS = present; PST = past; REM = remote past; S = subject; SG = singular.

(1) *Gudae   gudae   täräp me,   Kämag   a   Yäbäd a*
     old   old   time=LOC   west.wind   and   sun=NOM

   deyagerneyo.
   were living (live.REM.DUR.3DUS)
   'A long, long time ago, the West Wind and the Sun were living.'

(2) *Ttongo   yebdo me,   ubi   oba   mängall de   gonddoneyo.*
     one   day=LOC   they   their   strength=ACC   were boasting (boast.REM.DUR.3DUS)
     'One day, they were boasting about their strength.'

(3) *Kämag: "Ngämo   mängall a   ulle   dan."*
     west.wind   my   strength=NOM   big   is (COP.PRS.SGS)
     'The West Wind said, "I am very strong."'

(4) *Yäbäd   eka mu   dägagän ,   "Ddone,   ngämo   ade*
     sun   reply   did (AUX.REM.3SG>3SG)   no   my   FOC

   mängall a   ulle   dan."
   strength=NOM   big   is (COP.PRS.SGS)
   'Sun replied, "No, I am stronger."'

(5) *Ttongo   täräp me   ibiag a   dallnän.*
     one   time=LOC   traveller=NOM   was walking (go.REM.DUR.3SGS)
     'At that time, a traveler was walking.'

(6) *Bogo labalaba alle gokänewän.*
he   laplap=INST   had covered himself (cover.REM.REFL.3SGS)
'He had covered himself in a laplap.'

(7) *Käsre   ada   gogeyo,   da   aeya*
then   like.this   they went (AUX.REM.3DUS)   if   who

labalaba de   bängkänän   obo   pätt att
laplap=ACC   removes it (remove.FUT.3SG>3SG)   his   body=ABL

ede   obo   mängall a   ulle   dan.
so   his   strength=NOM   big   is (COP.PRS.SGS)
'Then the two said, whoever can remove the laplap from the traveler's body would
be the strongest.'

(8) *Kämag   angde   obo   wel de   ngattong*
west.wind   when   his   wind=ACC   first

daerängän   diba lla pate,
tested his strength (test.REM.3SG>3SG)   towards that man (that man=ANIM.ALL)

dapädoeyän   duduweduduwemang   ada   oba
he blew (blow.REM.3SG>3SG)   very strongly   like.this   so as to

obo   labalaba de   bängkänän,   be
his   laplap=ACC   remove it (remove.FUT.3SG>3SG)   but

ddone dängkänän.
he didn't remove it (not remove.REM.3SG>3SG)
'First, the West Wind tested his strength, he blew and blew to remove the laplap,
but he could not do it.'

(9) *Däbe   lla da   obo labalaba de   llokttangae   damllamän.*
that   man=NOM   his   laplap=ACC   strongly   held it (hold.REM.3SG>3SG)
'The man held onto his laplap very tightly.'

(10) *Kämag   llätt gogän   ada,   "Malla   ngäna*
west.wind   stopped (stop AUX.REM.3SG)   and said (like.this)   not   I

mulldae   dan."
capable   am (COP.PRS.SGS)
'The West Wind gave up, saying, "I cannot do it."'

(11) *Käsre   Yäbäd   gobergabän   ttänttäm peyang.*
then   sun   shone out (shine.REM.3SGS)   warmth=COM
'Then the sun shone out with great warmth.'

(12) *Yäbäd*   *angde*   *ttänttämang*   *abal*   *gogon,*   *däbe*
      sun   when   warm   very   became (AUX.REM.3SGS)   that

      lla da   *obo*   *labalaba de*   *dängkänän*
      man=NOM   his   laplap=ACC   removed it (remove.REM.3SG>3SG)

      ttänttäm att a   *a*   *memram a*   *dägagän.*
      heat=ABL=NOM   and   sweat=NOM   got him (AUX.REM.3SG>3SG)
      'When the Sun had become very hot, the man removed his laplap from the heat; he
      had started sweating.'

(13) *Kämag a*   *kiliminy*   *gogon*   *adawatta*   *Yäbäd bo*
      west.wind=NOM   unhappy   became (AUX.REM.3SGS)   because   sun=3SG.POSS

      mängall a   *ulle*   *daeya.*
      strength=NOM   big   was (COP.PST.SGS)
      'The West Wind was sad because the Sun was very strong.'

(14) *Kämag*   *ada gogon*   *"Bäne*   *mängall a*   *ulle*
      west.wind   said (like.this AUX.REM.3SGS)   your   strength=NOM   big

      dan,   *be*   *ngämo*   *kälsre*   *dan."*
      is (COP.PRS.SGS)   but   mine (my)   small   is (COP.PRS.SGS)
      'The West Wind said, "You are stronger than me." '

Acknowledgments

Supplementary material

To view supplementary material for this article (including audio files to accompany the language examples), please visit https://doi.org/10.1017/S0025100320000389.

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