Ambakich phonological sketch

Russell Barlow
Max Planck Institute for Evolutionary Anthropology

Abstract: This paper offers a sketch of the phonology of Ambakich (also known as Aion [aew]), a Papuan language of the East Sepik Province, Papua New Guinea. Ambakich is a member of the Keram language family. The paper is mainly concerned with segmental phonology. Since its purpose is to present basic data on an otherwise undescribed language, the paper also provides background information on the language and its speakers, as well as information on its closest relative, Ap Ma. Two appendices are included: an Ambakich word list of 630 items and an Ap Ma word list of 602 items.

Key words: Ambakich, Ap Ma, Keram, Papuan languages, East Sepik Province, Papua New Guinea, phonology

1. Introduction

Ambakich (also known as Aion [aew]) is a Papuan language of the Keram family, spoken in the East Sepik Province of Papua New Guinea (PNG). The present paper offers the first account of the phonology of the language and, in doing so, offers the first description of this otherwise undescribed language. The introduction (Section 1) provides some background information on the language, discussing previous research (§1.1), the classification of the language (§1.2), its location (§1.3), and its name (§1.4). Section 2 is an account of Ambakich segmental phonology, beginning with a presentation of the phoneme inventory (§2.1) and the phonetic realizations of these phonemes (§2.2), before discussing consonants (§2.3), vowels (§2.4), and syllable structure (§2.5). Section 3 offers a brief conclusion. Appendix 1 contains a list of 630 lexical items in Ambakich. Appendix 2 contains a list 602 lexical items in Ap Ma, the closest relative to Ambakich.

1.1 Previous research

The first mention of Ambakich is to be found in Capell (1962:48), who quotes a personal correspondence from Don Laycock, who himself professes no personal knowledge of the language but reports the existence of about 560 speakers of Aion [= Ambakich]. This number is based on information provided by Fr. Kovacs. Capell (1962:39) also depicts

Ambakich (as Aion) on a map of the Sepik Basin; it is shown as being spoken along the Bien River, with Kambot [= Ap Ma [kbx]] to the southwest, Angoram [= Kanda [aog]] to the west and north, Adjoria [= Adjora or Abu [ado]] to the east, and "Porapora", a spurious language, supposedly located to the southeast. As Z'graggen (1971:87) notes, however, the claim of a "Porapora" language probably results from confusion with the Porapora Census Division; in fact, in the area where this language is supposedly spoken there are speakers of Waran (or Banaro [byz]) and Adjora.

Z'graggen (1971:6) mentions having collected a word list of 30 items for Ambakich (presumably based on his field research conducted between 1964 and 1969), and provides his own map (idem:22). Due to scarcity of data, he only tentatively places Ambakich (as a primary branch) within his Ramu Phylum (Ap Ma is also tentatively classified as a primary branch of Ramu) (idem:88). Although claiming that no typological features will be given, he (idem:108) mentions in passing that nouns in Ambakich, as in other Ramu languages, exhibit formal number marking. Z'graggen (idem:14, 88) gives the approximate number of speakers as 820.

In February of 1971, Don Laycock, while in Angoram town, elicited linguistic material from Ambakich speakers from the village of Angang, which had moved (most likely in the late 1950s or early 1960s) to a new location along the Keram River (this village is currently called Yaut). His notes—unpublished, but available on the PARADISEC digital archive (Laycock 1971a)—record the name of the language as "Aion (No. 1 Porapora)". Laycock (1973:39) lists an estimated speaker population of 774 (as of January 1970), noting that Ambakich is spoken in seven villages: Agrant [= Agurant], Akaian, Angang, Arango, Ombos, Oremai [= Ormai], and Pankin [= Pangin]. He includes Aion/Ambakich in his "Grass Stock", itself a member of the Ramu Phylum, along with Kambot/Ap Ma, Gorovu, Adjora/Abu, and Banaro/Waran.

In January of 1990, Bill Foley conducted fieldwork with Ambakich speakers from Pangin [= Pankin] village. He has kindly shared photocopies of his unpublished field notes with me.

In January to February of 2003, the Summer Institute of Linguistics (SIL) conducted a sociolinguistic survey of the Ambakich language. Their findings are reported in Potter et al. (2008). They (idem:5) estimate that there are 770 speakers of Ambakich, listing the seven Ambakich villages as Pangin [= Pankin], Arango, Ombos, Akaian, Oremai [= Ormai], Agurant [= Agrant], and Yaut. They provide word lists for language varieties associated with five of these villages (all but Akaian and Oremia) (idem:60–65). They claim that there are two basic dialects: one (the northern dialect) spoken in the villages of Pangin and Arango,

and the other (the southern dialect) spoken in the other five villages.

In September 2018, I visited Yaut village and conducted linguistic research with four Ambakich speakers (all male residents of Yaut, aged roughly between 45 and 65) over the course of three days. My consultants included two speakers (Luke Abun and Alex Ebabuna) who were born and raised in Yaut, one speaker (Kellis Ajanda) who was born in Agrant but moved to Yaut as a young man, and one speaker (Vincent Gubul) who was old enough to have been born (c. 1953) in the old village of Angang before it moved (along with its inhabitants) to become the current village of Yaut.

In the same month, I also visited nearby Yamen village, where a dialect of Ap Ma (also known as Kambot or Botin [kbx]) is spoken. Ap Ma is the closest relative to Ambakich (although there are significant lexical differences even between these two languages). While in Yamen, I collected lexical (and some grammatical) data with the help of three consultants, all men in their mid-forties who were born and raised in Yamen village: Tony Jamken, Jerry Silas, and Samson Kokra. Previous research on Ap Ma (as spoken in other villages) includes Laycock (1971c), Laycock and Z'graggen (1975:758–760), Wade (1983, 1984), Abbott (1985), Pryor and Farr (1989), and Pryor (1990), all of which I have consulted in analyzing my data. Since Ap Ma is the closest relative to Ambakich, a brief consideration of its phonology will be informative for our understanding of Ambakich as well.

1.2 Classification

Ambakich is one of two members of the East Keram branch of the Keram family (Ap Ma is the other member). The other branch of the Keram family—known as Ulmapo or West Keram—consists of Ulwa (or Yaul [yla]), Mwakai (or Mongol [mgt]), and Pondi (or Langam [lnm]). Z'graggen (1971) tentatively placed Ambakich and Ap Ma in the Ramu family, and this may not be totally unfounded, as there is good evidence that the Keram and Ramu families are distantly related. Laycock (1973) saw a close affiliation among Ambakich, Ap Ma, Gorovu, Adjora, and Banaro (his so-called "Grass Stock"), but this is fallacious: Ambakich and Ap Ma belong to the Keram family, whereas the other three languages belong to the Ramu family. The best-supported classification of the Keram languages was first worked out by Timothy Usher (n.d.).

Potter et al. (2008:9), based on speaker perceptions and their own lexicostatistic assessment, determine that there are two dialects of Ambakich—northern and southern—although there is neither a great lexical difference nor a clear isogloss between the two.

1.3 Location

Ambakich is spoken in seven villages, all located within the Angoram District of the East Sepik Province in PNG. Six villages are located within the Marienberg Local-Level Government area (LLG), while the southernmost village (Yaut) is located in the Keram Rural LLG. Yaut village lies on the Keram River, whereas the other six villages lie to the northeast of Yaut, along the Porapora River (also known as the Bien River). Both rivers are tributaries to the Sepik River to the north.

The Ambakich data in this paper come from Yaut village, the geographic coordinates of which are 4°24'40" S, 144°13'55" E (-4.411, 144.232).

The related and neighboring Ap Ma language is spoken in 16 villages, all of which are located within the Keram Rural LLG. The Ap Ma data in this paper come from Yamen village, which is located on a tributary to the Keram River. The geographic coordinates of Yamen are 4°28'30" S, 144°03'00" E (-4.475, 144.050).

1.4 Name of the language

Earlier linguistic accounts of the language reported its name as *Aion*, which is the word for 'good' [ajɔn] in the language. More recent accounts report the name of the language as *Ambakich*, which is the negative response word 'no' [a^{m}bakɪtʃ]. Based on my own observations of linguistic groups in the region, I speculate that the endonym *Ambakich* is a relatively recent coinage, calqued from other glottonyms in the area (such as Ap Ma, Kanda, Abu, Waran, etc.), all of which mean 'no' in their respective languages. I believe that, in the past, many people of the area would have most typically identified themselves and others based on village names (as opposed to language names), perhaps not having a single term to unify all speakers (from different villages) of a single language. More recently (perhaps thanks in part to questioning from visiting missionaries and linguists), people have been adopting language names, and the trend seems to be to use the local word for 'no' or 'nothing' as the name.

2. Ambakich phonology

This account of Ambakich segmental phonology discusses the phoneme inventory (§2.1), phonetic realizations (§2.2), consonants (§2.3), vowels (§2.4), and syllable structure (§2.5).

2.1 Phoneme inventory

Ambakich has 19 phonemes, consisting of 13 consonants and 6 vowels. Table 1 presents the 13 consonant phonemes of Ambakich. The voiceless alveolar stop [t] and velar nasal [ŋ] are

included in brackets (and are not counted among the 13 consonants): they appear only in loanwords or as allophones of other consonants. Table 2 presents the 6 vowel phonemes of Ambakich. Although there is great phonetic variability between the two central vowels /ɨ, a/, there is no phonological evidence for positing a central vowel (i.e., /ə/) located between them. In both tables, IPA forms are included in parentheses, when such forms differ from the orthography used here.

Table 1. Ambakich consonant phonemes (IPA in parentheses where different)

	Labial	Alveolar	Palato-alveolar	Palatal	Velar
Voiceless stops	p	[t]			k
Voiceless affricate			tʃ		
Voiced stops	mb (^{m}b)	nd (^{n}d)			ŋg (^{ŋ}g)
Voiced affricate			dʒ (^{n}dʒ)		
Nasals	m	n			[ŋ]
Liquid		r			
Voiceless fricative		s			
Glides	w			j	

Table 2. Ambakich vowel phonemes (IPA in parentheses where different)

	Front	Central	Back
High	i	ɨ	u
Mid	e		o
Low		a (ɐ)	

Ap Ma has essentially exactly the same phoneme inventory of 13 consonants and 6 vowels. The only differences are: (1) the Ap Ma voiceless coronal occlusive consonant is /t/ instead of /tʃ/; (2) the Ap Ma liquid is treated here as /l/ instead of /r/, although it can at times be pronounced alternatively as a rhotic; (3) the Ap Ma voiced stops and affricates are consistently prenasalized; and (4) Ap Ma perhaps has a phonemic palatal nasal /ɲ/ (in which case it would actually have 14 consonants instead of 13). However, the palatal nasal [ɲ] generally only occurs as an allophone of the alveolar nasal /n/; otherwise, it occurs only infrequently, and its status as a phoneme is considered here to be unlikely. The velar nasal [ŋ] in Ap Ma is almost certainly (only) an allophone of the prenasalized voiced velar stop /ŋg/. The Ap Ma phonemes are thus as follows: /p, t, k, ^{m}b, ^{n}d, ^{ŋ}g, ^{n}dʒ, m, n, (ɲ), (ŋ), l, s, w, j, i, ɨ, u, e, o, ɐ/. They are written in the present orthography as: <p, t, k, mb, nd, ŋg, ndʒ, m, n,

(ɲ), (ŋ), l, s, w, j, i, ɨ, u, e, o, a>.

2.2 Phonetic realizations

Of course, the phonetic realizations of the 19 Ambakich phonemes can vary, whether as the result of the general permissibility of articulatory variation in any given environment or as the result of environmentally conditioned allophony. These variations are summarized in Table 3 (for consonants) and Table 4 (for vowels).

Table 3. Ambakich consonants phones, in IPA

	Labial	Alveolar	Palato-alveolar	Palatal	Velar
Voiceless stops	[p, ɸ]				[k, k^h, q, ʔ]
Voiceless affricate			[tʃ, t, s]		
Voiced stops	[^{m}b, b, β]	[^{n}d, d]			[^{ŋ}g, g, ɣ]
Voiced affricate			[^{n}dʒ, dʒ]		
Nasals	[m]	[n, ɲ, ŋ]			([ŋ])
Liquid		[ɾ, ɹ, r, l, ɭ]			
Voiceless fricative		[s, ʃ]			
Glides	[w, ŋ, ʊ, u]			[j, ɲ, dʒ, ɪ, i]	

Table 4. Ambakich vowel phones, in IPA

	Front	Central	Back
High	[i, ɪ, ɨ, ĩ]	[ɨ, ɘ, ə, ɤ, ɨ̃]	[u, ʊ, ɤ, ɨ, ũ]
Mid	[e, ɛ, ə, ẽ]		[o, ɔ, õ]
Low		[ɐ, ə, ɛ, ʌ, ɔ, ɐ̃]	

2.3 Consonants

The 13 Ambakich consonants may be categorized as constituting eight obstruent consonants (§2.3.1) and five sonorant consonants (§2.3.2).

2.3.1 Obstruent consonants

On a more abstract level (that is, compared to that depicted in the phoneme inventory in Table 1), the set of eight obstruent consonants can be thought of as comprising two series (one voiceless and one voiced), as depicted in Table 5. This depiction is meant to capture the diachronic facts of the system (namely that Ambakich /tʃ/ derives from proto-Keram /*t/), as

well as some of the synchronic facts of the language, such as that /s/ can also be pronounced [ʃ], and that /tʃ/ is realized as [t] in certain environments.

Table 5. Ambakich obstruent consonants

p	tʃ	s	k
mb	nd	ndʒ	ŋg

Thus, the eight obstruents may be collapsed into two series: voiceless (§2.3.1.1) and voiced (§2.3.1.2), as discussed below. The sole fricative in the language (/s/) is discussed separately (§2.3.1.3).

2.3.1.1 Voiceless stops and affricates

There is a three-way place distinction among voiceless stops and affricates in Ambakich: the frontmost stop is a labial /p/, the backmost stop is a dorsal /k/, and in between these two is the coronal affricate /tʃ/. On crosslinguistic (or typological) grounds, this affricate may be considered the language-specific manifestation of the voiceless alveolar stop /t/. Indeed, it has arisen historically from proto-Keram /*t/. Synchronically, however, the palato-alveolar [tʃ] realization of this phoneme has the widest distribution, with the alveolar stop [t] occurring only as an environmentally restricted allophone.

The /p/ is an unaspirated voiceless bilabial plosive. It may occasionally occur as a voiceless bilabial fricative [ɸ], especially when following /k/. The /k/ is generally an unaspirated voiceless velar plosive, although it has also been observed to be aspirated [kʰ]. In some environments, /k/ may be pronounced as a uvular [q] or glottal [ʔ] stop. The /tʃ/ is a voiceless palato-alveolar affricate. In certain environments it may be pronounced as an alveolar stop [t] or as an alveolar fricative [s].

Of these three consonants, the labial /p/ has a somewhat more limited distribution, as it does not occur word-initially. It may only occur word-medially or word-finally. Palato-alveolar /tʃ/ and velar /k/, on the other hand, may both occur word-initially, word-medially, and word-finally. When either directly preceding or directly following the high central vowel /ɨ/, palato-alveolar /tʃ/ is often realized as alveolar [t]. Elsewhere, the (very infrequent) occurrence of the voiceless alveolar stop /t/ is believed here to be due to borrowing. In word-initial position, /k/ is often realized as [q] or [ʔ]. The pairs in (01) exhibit contrasts between /p/ and /k/.

(01)	a**p**a	‘bunch (of bananas)’	a**k**a	‘hip’
	mbo**p**a	‘ball’	mbo**k**a	‘reeds’
	a**p**ɨndoi	‘bad’	a**k**ɨnok	‘bird sp.’
	ndo**p**	‘hand’	ndo**k**	‘stinging nettle sp.’

The pairs in (02) exhibit contrasts between /p/ and /tʃ/.

(02)	a**p**ɨr	‘far’	a**tʃ**ɨmo	‘chest’
	kɨ**p**a	‘breadfruit’	kɨ**tʃ**ar	‘bamboo sp.’
	mba**p**a	‘leaf’	ka**tʃ**ap	‘full’
	mbo**p**a	‘ball’	wo**tʃ**a	‘why?’
	ndo**p**	‘hand’	ko**tʃ**	‘vomitus’

The pairs in (03) exhibit contrasts between /k/ and /tʃ/.

(03)	**k**an	‘ear’	**tʃ**an	‘arrow shaft’
	mbo**k**a	‘reeds’	wo**tʃ**a	‘why?’
	tʃu**k**e	‘tobacco’	ku**tʃ**en	‘cough’
	mbori**k**	‘frog sp.’	kori**tʃ**	‘breast’

As mentioned, the voiceless bilabial stop /p/ does not occur word-initially. Furthermore, the voiceless velar stop /k/ appears to be undergoing a diachronic process of lenition and deletion in word-initial position, a common development in the languages of the region. Often, word-initial /k/ is pronounced as a voiceless uvular stop [q] or as a glottal stop [ʔ], as shown in (04). The process seems mostly to affect initial velars that immediately precede either /a/ or /o/.

(04)	/**k**a/	[ka ~ **q**a]	‘betel palm’
	/**k**aja/	[kaja ~ **ʔ**aja]	‘older brother’
	/**k**ajok/	[**q**ajok]	‘frog sp.’
	/**k**amboi/	[**q**a^{m}boi ~ **ʔ**a^{m}boi]	‘man [NPL]’
	/**k**o/	[ko ~ **q**o]	‘one’
	/**k**okor/	[**ʔ**okol]	‘chicken’
	/**k**omi/	[komi ~ **ʔ**omi]	‘boys [PL]’

Each of these three voiceless occlusives /p, k, tʃ/ may either directly precede or directly follow any of the six vowels in the language. However, when directly preceding or following the high central vowel /ɨ/, the palato-alveolar affricate /tʃ/ is often pronounced as a voiceless alveolar stop [t], as shown in (05).

(05)	/ku**tʃɨ**r/	[ku**tɨ**l]	‘heavy’
	/a**tʃɨ**pe/	[a**tɨ**pe]	‘already’
	/am**ɨt**ʃap/	[am**ɨt**ap]	‘chin’

Additionally, [t] is sometimes produced when /tʃ/ occurs word-finally (06). This phonetic realization has mainly been observed when the low vowel /a/ immediately precedes.

(06)	/mow**atʃ**/	[mowatʃ ~ mow**at**]	‘shoulder’ (see also example 31)
	/embij**atʃ**/	[e^{m}bij**at**]	‘short’
	/er**ɨpatʃ**/	[el**ɨpat**]	‘wide’

Other instances in which [t] is found—that is, not neighboring the high central vowel /**ɨ**/—are presumed to be loanwords. There are not many of these (07).

(07)	kapo**t**	‘taro’
	kan**to**t	‘mushroom’
	tutep	‘ant sp.’

The form [kapot] ‘taro’ might alternatively be explained as another example of word-final fortition, as in (06). Also, perhaps the forms [kantot] ‘mushroom’ and [tutep] ‘ant sp.’ result from an (overly) dissimilative process affecting an underlying /-tʃVtʃ-/ sequence (although cf. *ditʃatʃ* ‘betel pepper vine’ and *tʃitʃor* ‘pumpkin’). They may, alternatively, be loanwords.

In word-final position, following the high front vowel /i/, the palato-alveolar affricate /tʃ/ is sometimes pronounced as a voiceless alveolar fricative [s], as in (08).

(08)	/ndos**itʃ**/	[^{n}dos**is**]	‘forearm’
	/mos**itʃ**/	[mos**is**]	‘bladder’
	/ambak**itʃ**/	[a^{m}bakitʃ ~ a^{m}bak**is**]	‘no’

2.3.1.2 Voiced stops and affricates

As opposed to the three-way place distinction found among voiceless stops and affricates, there is a four-way place distinction found among voiced stops and affricates (the fricative /s/ may here be considered to fill a gap in this voiceless series; see Table 5). These voiced obstruent consonants are a labial stop /mb/, an alveolar stop /nd/, a velar stop /ŋg/, and a palato-alveolar affricate /ndʒ/. They are usually produced with prenasalization [^{m}b, ^{n}d, ^{ŋ}g, ^{n}dʒ]—that is, they are pronounced with a preceding homorganic nasal articulation. They

may, however, be realized as plain voiced stops (i.e., without prenasalization). Generally, the plain allophones only occur when the consonant is not directly preceded by a vowel (i.e., when they occur word-initially or as the second element in a consonant cluster). Since there is just a two-way voicing contrast among stops and affricates in Ambakich—namely, between voiceless and (prenasalized) voiced—these voiced consonants may, on typological grounds, be treated simply as /b, d, g, dʒ/. However, based on the distribution of voiced stops and affricates within the synchronic grammar of Ambakich, as well as the reconstructability of prenasalization in the protolanguage, these consonants are believed here to be underlyingly prenasalized, with denasalization occurring as a phonological process.

The prenasalized voiced bilabial plosive /mb/ has also been occasionally observed to be pronounced as [β] when in intervocalic position. The prenasalized voiced velar plosive /ŋg/ has similarly been observed to be pronounced as [ɣ] when in intervocalic position. The prenasalized voiced alveolar plosive /nd/ and the prenasalized voiced palato-alveolar affricate /ndʒ/ are not known to exhibit any considerable phonetic variation, aside from the aforementioned variation in prenasalization.

These voiced stops and affricates may be contrasted with their respective voiceless counterparts. The pairs in (09) exhibit contrasts between /mb/ and /p/.

(09)	a**mb**a	‘papa’	a**p**a	‘bunch (of bananas)’
	mo**mb**a	‘heart’	mbo**p**a	‘ball’
	ma**mb**ɨn	‘nut sp.’	ba**p**ɨn	‘armpit’
	o**mb**ɨr	‘digit’	o**p**ɨ	‘mountain’
	e**mb**an	‘cassowary’	moŋge**p**a	‘banana sp.’

The pairs in (10) exhibit contrasts between /ŋg/ and /k/.

(10)	**ŋg**atʃ	‘guts’	**k**atʃ	‘laughter’
	ŋgu	‘sickness’	**k**u	‘packet’
	mba**ŋg**a	‘woven fronds’	mba**k**a	‘stick’
	a**ŋg**ɨn	‘star’	a**k**ɨn	‘groin’

The pairs in (11) exhibit contrasts between /ndʒ/ and /tʃ/.

(11)	**ndʒ**ak	‘many’	**tʃ**an	‘arrow shaft’
	ndʒi	‘vulva’	**tʃ**ɨ	‘scrotum’
	ma**ndʒ**andʒuwa	‘bitter’	ka**tʃ**ap	‘full’
	aŋgre**ndʒ**o	‘insect sp.’	mbe**tʃ**o	‘hot’

While there is no voiceless alveolar stop (/t/) with which to contrast the voiced alveolar stop /nd/, we may wish here also to contrast /nd/ with the voiceless affricate /tʃ/, since—both diachronically and typologically—this consonant may be considered to be the 't' of the language. Thus, the pairs in (12) offer contrasts between /nd/ and /tʃ/.

(12)				
	ndinaʈʃ	'dry'	**tʃ**in	'machete handle'
	ndana	'adze'	**tʃ**an	'arrow shaft'
	a**nd**in	'those'	ka**tʃ**i	'head'
	a**nd**o	'thither'	a**tʃ**o	'father'

All four of these voiced oral occlusives are found word-initially, although in this position they often lose their nasalization. This seems to be a regular process for multisyllabic words (13).

(13)			
	/**mb**akar/	[**b**akal]	'belch'
	/**mb**ewa/	[**b**ewa]	'ribs'
	/**mb**onda/	[**b**o^{n}da]	'pond'
	/**nd**andɨ/	[**d**a^{n}dɨ]	'maggot'
	/**nd**oja/	[**d**oja]	'wind'
	/**ŋg**iŋge/	[**g**i^{ŋ}ge]	'tree sp.'
	/**nd**ʒino/	[**d**ʒino]	'hole'
	/**ŋg**ɨ-anɨ/	[**g**anɨ]	'this talk'

Prenasalization, however, is generally retained in word-initial voiced stops belonging to monosyllabic words (14).

(14)			
	/**mb**ɨ/	[^{m}**b**ɨ]	'you [SG]'
	/**mb**e/	[^{m}**b**e ~ be]	'fat'
	/**mb**o/	[^{m}**b**o ~ bo]	'turtle'
	/**nd**op/	[^{n}**d**op]	'hand'
	/**nd**un/	[^{n}**d**un]	'eye'
	/**ŋg**a/	[^{ŋ}**g**a]	'this'
	/**ŋg**aʈʃ/	[^{ŋ}**g**aʈʃ ~ gaʈʃ]	'guts'
	/**nd**ʒi/	[^{n}**d**ʒi]	'vulva'
	/**nd**ʒak/	[^{n}**d**ʒak ~ dʒak]	'mother'

All four of these consonants are found intervocalically, and each may either directly precede or directly follow any of the six vowels in the language. Generally, prenasalization is retained when voiced stops occur intervocalically. A very small number of exceptions have been observed. The words in (15) have been recorded as being pronounced without

prenasalization despite the intervocalic position of their respective voiced obstruents. It is not entirely clear what may be conditioning this, but in four of the words the non-prenasalized stop is immediately preceded by /ŋgɨ-/. Also, at least three of the words are likely to have been borrowed from other languages.

(15)	/a**mb**a/	[a**b**a]	‘papa’
	/a**mb**ar/	[a**b**ʌl]	‘side’
	/a**mb**ɨr/	[a**b**ɨl]	‘men [PL]’
	/ŋgɨ**mb**a/	[gɨ**b**ʌ]	‘morning’
	/ŋgɨ**mb**oro/	[gɨ**b**ɔɾo]	‘night’
	/ŋgɨ**mb**u/	[gɨ**b**u]	‘*garamut* drum’
	/ŋgɨ**nd**an/	[gɨ**d**ʌn]	‘snake sp.’
	/ŋgu**nd**a/	[gu**d**ʌ]	‘enemy’
	/a**ŋg**ir/	[a**g**iɾ]	‘gecko’ (loan)
	/e**ŋg**im/	[ɛ**g**im]	‘wallaby’ (loan)
	/ŋgra**ndʒ**am/	[gɾa**dʒ**am]	‘corn’ (loan)

The voiced oral occlusives /mb, nd, ŋg, ndʒ/ do not occur word-finally in Ambakich.

2.3.1.3 Voiceless fricative

The sole fricative in Ambakich is a sibilant voiceless alveolar fricative /s/. It has occasionally been observed to palatalize to [ʃ] when immediately followed by a high front vowel. The voiceless alveolar fricative /s/ may be contrasted with the three other coronal obstruents in Ambakich. The pairs in (16) exhibit contrasts between /s/ and /nd/.

(16)	**s**ino	‘root’	**nd**inatʃ	‘dry’
	sɨ	‘girl’	**nd**ɨmo	‘betel pepper’
	sok	‘three’	**nd**ok	‘stinging nettle sp.’
	suwa	‘bird sp.’	**nd**uwap	‘betel pepper leaf’
	a**s**a	‘rattan cane’	a**nd**a	‘that’

The pairs in (17) exhibit contrasts between /s/ and /ndʒ/.

(17)	**s**i	‘come’	**ndʒ**i	‘vulva’
	a**s**a	‘rattan cane’	ma**ndʒ**andʒuwa	‘bitter’
	ma**s**oka	‘banana leaf sheath’	kamba**ndʒ**o	‘child’

The pairs in (18) exhibit contrasts between /s/ and /tʃ/.

(18)	**s**in	‘blood’	**tʃ**in	‘machete handle’
	sɨ	‘girl’	**tʃ**ɨmai	‘friend’
	suwa	‘bird sp.’	**tʃ**uke	‘tobacco’
	a**s**a	‘rattan cane’	ka**tʃ**ap	‘full’

The fricative /s/ may occur word-initially or word-medially. It does not, however, occur word-finally as a phoneme. The affricate /tʃ/, however, may be realized as [s] when word-final and immediately following /i/ (see example 08). Although the fricative /s/ is generally pronounced with minimal phonetic variation, it has—as mentioned—been observed occasionally to palatalize to a voiceless palato-alveolar fricative /ʃ/ when immediately preceding the high front vowel /i/ (19).

(19) /**si**no/ [**ʃi**no ~ sino] ‘root’

2.3.2 Sonorant consonants

Sonorant consonants in Ambakich consist of two nasals (§2.3.2.1), one liquid (§2.3.2.2), and two glides (§2.3.2.3). These five consonants are presented in Table 6. The placement of /w/ in the velar (as opposed to labial) column represents the fact that this glide exhibits allophony with the velar nasal [ŋ] (similarly, the palatal glide /j/ exhibits allophony with a palatal nasal [ɲ]).

Table 6. Ambakich sonorant consonants

m	n		
	r		
		j	w

2.3.2.1 Nasals

Ambakich has two phonemic nasal consonants: labial /m/ and alveolar /n/. A very small number of words seem to contain the velar nasal /ŋ/; few, if any, of these would be considered basic vocabulary, and I believe (at least some of) them to be loanwords. Otherwise, [ŋ] only occurs phonetically: alveolar /n/ may be realized as velar [ŋ] when immediately preceding a velar stop /k/ or high back vowel /u/; the velar nasal [ŋ] is also present phonetically as part of the prenasalized velar stop /ŋg/; finally, back vowels in underlyingly open syllables sometimes appear to be closed with velar [ŋ]. The palatal nasal [ɲ] also occurs only phonetically, without phonemic status: when immediately preceding the high front vowel /i/, alveolar /n/ is palatalized to [ɲ]; this palatal nasal [ɲ] also occurs as an

occasional allophone of the palatal glide /j/ when it immediately precedes the low vowel /a/. The pairs in (20) exhibit contrasts between the two nasal phonemes in Ambakich, /m/ and /n/.

(20)	**m**i	'feces'	**n**i	'I' [ɲi]
	mok	'very'	**n**otʃ	'with [INS]'
	e**m**ɨr	'waistcloth'	e**n**ɨ	'banana'
	ko**m**o	'boy [NPL]'	o**n**op	'village'
	a**m**ɨ	'water'	a**n**ɨ	'talk'
	a**m**	'old woman'	a**n**	'fire'

These two voiced nasal stops may also be contrasted with their voiced oral stop equivalents (especially since the latter are prenasalized and thus, phonetically, contain these nasals as part of their articulation). The pairs in (21) exhibit contrasts between /m/ and /mb/.

(21)	**m**e	'possum'	**mb**e	'fat'
	mi	'feces'	**mb**i	'rat sp.'
	mok	'very'	**mb**oka	'reeds'
	e**m**an	'liver'	e**mb**an	'cassowary'

The pairs in (22) exhibit contrasts between /n/ and /nd/.

(22)	**n**i	'I' [ɲi]	**nd**ija	'fly sp.'
	a**n**ɨ	'we'	a**nd**ɨr	'vine sp.'
	mo**n**a	'smoke'	ko**nd**am	'coconut shell'

When immediately preceding the high front vowel /i/, the velar nasal /n/ palatalizes to [ɲ], as in (23).

(23)	/**ni**/	[**ɲi**]	'I'
	/**ni**n/	[**ɲi**n]	'odor'
	/**ni**rka/	[**ɲi**lka]	'afterwards'
	/**ni**rok/	[**ɲi**ɾok]	'bird sp.'
	/mɨ**ni**n/	[mɨ**ɲi**n]	'rotten'

When immediately preceding the voiceless velar stop /k/, the alveolar nasal /n/ assimilates in place to [ŋ], as in (24).

(24)	/mbɨko**nk**/	[bɨko**ŋk**]	‘skin’
	/ka**nk**ok/	[ka**ŋk**ok]	‘bridge’

When immediately preceding the high back vowel /u/, the alveolar nasal /n/ is realized as a velar [ŋ], as in (25).

(25)	/**nu**/	[**ŋu**]	‘fish sp.’
	/**nu**n/	[**ŋu**n]	‘grass’

The retention of alveolar [n] in the forms [gunuɾ] ‘ant sp. (red ant)’ and [nu^{ŋ}gun] ‘two’ is perhaps due to the (dissimilating) effect of the nearby velar [(^{ŋ})g]. (The word for ‘two’ likely derives from Proto-Keram ***ni*** ‘two’ + ***-ŋgun*** ‘DU’, and this derivation may also play a role in its current pronunciation.)

There are three known instances of word-final velar nasal [ŋ] immediately following the low vowel /a/ (26). It is possible that word-final [ŋ] is an allophone of /n/, although I can find no likely conditioning environment for this.

(26)	/ŋgra**n**/ (?)	[gɾa**ŋ**]	‘outside’
	/aima**n**/ (?)	[aima**ŋ**]	‘ant sp.’
	/ksa**n**/ (?)	[ksa**ŋ**]	‘basket’

Alternatively, these may be loanwords, as is likely the case at least for *ksaŋ* ‘basket’, which I suspect derives from the neighboring Waran/Banaro word <k^{h}ʌˈtuŋ> ‘net bag’ (Davies and Comrie 1985:301).

The cardinal numeral ‘one’, when used in counting, is generally pronounced with a final velar nasal [ŋ], which follows the mid back vowel /o/ (27).

(27)	/ko**n**/ (?)	[kɔ**ŋ** ~ qo**ŋ**]	‘one’

When used attributively (i.e., as a quantifier to designate exactly one referent), the numeral ‘one’ is /ko/, without a final nasal. If the counting number [koŋ] ‘one’ underlyingly ends in /-n/, then it is unclear why this would be pronounced as a velar nasal, and this may just be a lexically specified rule. (It may be noted that there are no known instances of [ŋ] immediately following a front vowel.)

Both phonemic nasals /m, n/ have a wide distribution in Ambakich, occurring word-initially, word-medially, and word-finally.

2.3.2.2 Liquid

There is a single liquid consonant in Ambakich, an alveolar /r/, which can be pronounced either as a rhotic or as a lateral. Indeed, this consonant can be pronounced in a variety of ways, in part influenced by phonetic environment, but largely in free variation across and even within speakers. The main realizations of the liquid consonant are a voiced alveolar tap [ɾ], a voiced alveolar trill [r], a voiced alveolar approximant [ɹ], a voiced alveolar lateral approximant [l], and a voiced alveolar lateral flap [ɺ]. Although this consonant has a fairly wide distribution—occurring word-finally, word-medially (able to follow or precede any of the six vowels in the language), and as the second member of a number of consonant clusters (see example 44)—it never occurs word-initially (the irrealis suffix /-ɾ/ 'IRR' is just that—a suffix).

The alveolar liquid /r/ may be contrasted with the only other alveolar sonorant consonant in the language, the alveolar nasal /n/ (28).

(28)	a**r**a	'granddaughter'	a**n**a	'paddle'
	a**rɨ**	'they'	a**nɨ**	'we'
	mamba**r**	'stand'	mamba**n**	'pan'
	akɨ**r**	'seedling'	akɨ**n**	'groin'

The pairs in (29) exhibit contrasts between /r/ and /nd/, the only other voiced alveolar oral consonant in the language.

(29)	a**r**a	'granddaughter'	a**nd**a	'that'
	ko**r**ak	'vegetable sp.'	ko**nd**am	'coconut shell'
	e**r**omba	'bird sp.'	e**nd**om	'mango'
	ŋgu**r**a	'decoration'	ŋgu**nd**a	'enemy'

2.3.2.3 Glides

Ambakich has two glides (or semivowels or approximants): a voiced labio-velar glide /w/ and a voiced palatal glide /j/. Both glides are phonetically similar to high vowels (/u/ and /i/, respectively), and, at times, the distinction between them is not clear—that is, these glides may behave vocalically, serving as the nucleus to a syllable (accordingly, /w/ has the allophones [u, ʊ], while /j/ has the allophones [i, ɪ]). It may be the case that glides do not occur in word-final position. The pairs in (30) exhibit contrasts between /w/ and /j/.

(30)	**w**a	‘crocodile’	**j**ak	‘sago flour’
	wija	‘when?’	**j**ino	‘hole’ [dʒino]
	wuru	‘carve’	**j**ur	‘eel’ [dʒuɾ]
	wo	‘how?’	**j**om	‘sago pancake’
	a**w**a	‘tusk’	ka**j**a	‘older brother’
	e**w**ar	‘louse’	e**j**a	‘ginger sp.’
	ko**w**a	‘mosquito bite’	ŋgo**j**a	‘thorn’
	a**w**epa	‘night wind’	a**j**e	‘boil, blister’
	a**u** (?)	‘old man’	a**i** (?)	‘lime’
	aŋgwa**u** (?)	‘magic’	kawa**i** (?)	‘tree sp.’

When immediately following /o/ and not immediately preceding a consonant, the voiced labio-velar glide /w/ may be pronounced as a labial nasal [ŋ], as in (31).

(31)	/m**ow**atʃ/	[m**oŋ**atʃ ~ mowatʃ]	‘shoulder’ (see also example 06)
	/m**ow**a/	[m**oŋ**a]	‘thatch’ (see also example 39)

Similarly, when immediately preceding /a/, the voiced palatal glide /j/ may be pronounced as a palatal nasal [ɲ], as in (32).

(32)	/ka**ja**/	[ka**ɲa**]	‘skirt’
	/ŋga**ja**/	[ga**ɲa** ~ gaja]	‘tree sp.’
	/ka**ja**m/	[ka**ɲa**m]	‘tree sp.’
	/mu**ja**/	[mu**ɲa**]	‘bandicoot’
	/**ja**k/	[**ɲa**k ~ jak]	‘sago flour’
	/**ja**/	[**ɲa**]	‘-self [REFL]’

When immediately followed by a high vowel /i, ɨ, u/, the voiced palatal glide /j/ is consistently strengthened to the affricate [dʒ]. It should be noted that this [dʒ], in contrast to the phonemic voiced affricate /ndʒ/ is never prenasalized. The affricate [dʒ], here, is an environmentally conditioned allophone of the glide /j/. The two pronunciations [j, dʒ] are found in complementary distribution: the former precedes non-high vowels /e, o, a/, whereas the latter precede high vowels /i, ɨ, u/ (neither may precede consonants or occur word-finally). This phonetic realization of [dʒ] for the underlying glide /j/ may be contrasted with the prenasalized realization of the underlying affricate [^{n}dʒ], as made clear by the minimal pair presented in (33).

(33)	/ji/	[dʒi]	‘name’
	/ndʒi/	[^{n}dʒi]	‘vulva’

Although the two glides /w/ and /j/ are treated as phonemes in this analysis, their phonemic status is less secure than that of the other consonants. They may alternatively be considered allophones of the high vowels /u/ and /i/, respectively. However, the fact that they may each immediately precede or follow these high vowels perhaps suggests that they are distinct phonemes. That said, the putative glides /w/ and /j/ behave in a rather peculiar way when immediately preceding /u/ and /i/, respectively. As just mentioned, the palatal glide /j/ strengthens to [dʒ] when immediately preceding /i/ (as well as /u/). The labio-velar glide /w/, on the other hand, is commonly elided when immediately preceding /u/. This sequence is only known to occur in two words, the verb *wuru* 'carve' and the negative marker *wune* 'NEG', which, in connected speech, are often pronounced [uru] and [une], respectively. Nevertheless, it is more likely for the glide to be there underlyingly in these words (rather than for it to appear prothetically), because otherwise there are no known instances of word-initial high vowels in the language (§2.4). The non-high vowels /a, e, o/ may all either precede or follow the semivowels /w/ and /j/.

Moreover, on phonetic grounds, it is often difficult to assign consonantal status to these forms, since they may serve as nuclei of their own syllables, as in the word for 'old man', which may be pronounced either as [aw] or as [a.u].

Although it may appear at times that [w] and [j] are not underlyingly present but are rather serving as transitional glides before or after vowels, contrasts such as *awa* 'tusk' vs. *kaja* 'older brother' suggest that /w/ and /j/ are likely phonemic, at least in some places (the only other options for analyzing these words would be either that sequences of three vowels are permitted, i.e., /aua/ and /kaia/, or that underlying two-vowel sequences are broken up with glides, but this would require an unconditioned contrast between insertion of [w] and insertion of [j], as well as the presence of underlying geminate vowels /aa/).

2.4 Vowels

There are six vowel phonemes in Ambakich. They are a high front unrounded vowel /i/ (§2.4.1), a mid front unrounded vowel /e/ (§2.4.2), a low central unrounded vowel /a/ (§2.4.3), a mid back rounded vowel /o/ (§2.4.4), a high back rounded vowel /u/ (§2.4.5), and a high central unrounded vowel /ɨ/ (§2.4.6). All six vowels may occur word-medially or word-finally, but high vowels /i, u, ɨ/ do not—almost without exception—occur word-initially. Indeed, there are no known instances of word-initial /ɨ-/ or /u-/. There is one apparent instance of word-initial /i-/, in the word *itfa* 'mama' (alternatively pronounced [ita]), which appears to be anomalous. Vowels may at times nasalize (§2.4.7). Vowel reduction in open syllables is common (§2.4.8). Processes of vowel epenthesis or vowel

elision pose challenges for determining underlying forms (§2.4.9).

2.4.1 High front vowel /i/

The high front unrounded vowel /i/ is often realized as the lax vowel [ɪ], and may be centralized to [ɨ]. The high front vowel /i/ is one of three high vowels in the language. The sets in (34) show contrasts between /i/ and the other two high vowels, /ɨ/ and /u/.

(34)	m**i**	‘feces’	m**ɨ**	‘he, she, it’	ŋg**ɨ**m**u**	‘canoe’
	mb**i**	‘rat sp.’	mb**ɨ**	‘you [SG]’	ŋg**ɨ**mb**u**	‘*garamut* drum’
	n**i**	‘I’ [ɲi]	en**ɨ**	‘banana’	n**u**	‘fish sp.’ [ŋu]
	ak**i**no	‘claw’	ak**ɨ**nok	‘bird sp.’	k**u**n	‘upper lip’
	k**i**tʃ	‘not’	k**ɨ**tʃar	‘bamboo sp.’	k**u**tʃen	‘cough’

The high front vowel /i/ is one of two front vowels in the language. The pairs in (35) show contrasts between /i/ and the other front vowel, /e/.

(35)	m**i**	‘feces’	m**e**	‘possum’
	mb**i**	‘rat sp.’	mb**e**	‘fat’
	and**i**n	‘those’	nd**e**n	‘rain’
	tʃ**i**n	‘machete handle’	kutʃ**e**n	‘cough’

2.4.2 Mid front vowel /e/

The mid front unrounded vowel /e/ is often realized as the lax vowel [ɛ], and may be centralized to [ə]. The mid front vowel /e/ is one of three non-high vowels in the language. The sets in (36) show contrasts between /e/ and the other two non-high vowels, /a/ and /o/. Contrasts between /e/ and the other front vowel /i/ are given in example 35.

(36)	**e**m	‘sun’	**a**m	‘old woman’	**o**ma	‘wife’
	en**ɨ**	‘banana’	**a**n**ɨ**	‘we’	**o**n**ɨ**	‘you [PL]’
	aw**e**pa	‘night wind’	mb**a**pa	‘leaf’	mb**o**pa	‘ball’
	nd**e**no	‘fuzz’	nd**a**na	‘adze’	nd**o**na	‘right’
	mb**e**tʃ	‘gray hair’	amb**a**tʃ	‘mother’s sister’	amb**o**tʃ	‘mound’
	atʃ**ɨ**p**e**	‘already’	k**ɨ**p**a**	‘breadfruit’	k**ɨ**p**o**	‘sago pith’

These three non-high vowels /e, a, o/, unlike high vowels, may occur word-initially.

2.4.3 Low vowel /a/

The sole low vowel /a/ is often realized as a low central unrounded vowel [a] (IPA: [ɐ]), but

is typically raised in open syllables to [ə]. It may also be pronounced as a front vowel [ɛ], or as a back vowel [ʌ], and (when neighboring /w/) may be rounded to [ɔ]. The low vowel /a/ is one of two central vowels in the language. The pairs in (37) show contrasts between /a/ and the other central vowel, /ɨ/. Contrasts with the other non-high vowels /e, o/ are given in example 36.

(37)	amb**a**	'papa'	amb**ɨ**	'affine'
	ak**a**	'hip'	ak**ɨ**	'house'
	k**ɨ**p**a**	'breadfruit'	k**ɨ**p**ɨ**	'nose'
	amb**a**r	'side'	amb**ɨ**r	'men [PL]'
	mb**a**ka	'stick'	mb**ɨ**kan	'lizard'
	k**a**tʃap	'full'	k**ɨ**tʃar	'bamboo sp.'

2.4.4 Mid back vowel /o/

The mid back rounded vowel /o/ is often realized as the lax vowel [ɔ]. The mid back vowel /o/ is one of two back vowels in the language (these are also the only two rounded vowels in the language). The pairs in (38) show contrasts between /o/ and the other back vowel /u/. Contrasts with the other non-high vowels /a, e/ are given in example 36.

(38)	n**o**	'with [INS]'	n**u**	'fish sp.' [ŋu]
	mb**o**	'turtle'	ŋg**ɨ**mb**u**	'*garamut* drum'
	mb**o**rik	'frog sp.'	mb**u**r	'grub sp.'
	nd**o**na	'right'	nd**u**n	'river'
	nd**o**p	'hand'	kand**u**p	'axe'
	k**o**tʃ**ɨ**r	'shelf'	k**u**tʃen	'cough'

2.4.5 High back vowel /u/

The high back rounded vowel /u/ is often realized as the lax vowel [ʊ] (and sometimes also unrounded to [ɤ]), and may be centralized to [ɨ]. Contrasts between /u/ and the other high vowels /i, ɨ/ are given in example 34. Contrasts between /u/ and the other back vowel /o/ are given in example 38.

2.4.6 High central vowel /ɨ/

The high central unrounded vowel /ɨ/ is often lowered to [ɘ] or even to [ə], and may occasionally be pronounced as an unrounded mid back vowel [ɤ]. Contrasts between /ɨ/ and the other high vowels /i, u/ are given in example 34. Contrasts between /ɨ/ and the other central vowel /a/ are given in example 37.

2.4.7 Nasalization

Vowels are sometimes nasalized when immediately following the bilabial nasal /m/, especially when not themselves followed by consonants, as in (39).

(39)	/**mi**/	[mi ~ mɪ ~ **mĩ**]	'feces'
	/**me**/	[mɛ ~ **mẽ**]	'possum'
	/ŋg**ɨmu**/	[gɨmʊ ~ g**mũ**]	'canoe'
	/kapa**mo**/	[qapʌmɔ ~ ʔapʌ**mõ**]	'feather'
	/**mo**wa/	[moŋa ~ **mõ**ŋʌ]	'thatch' (see also example 31)
	/**mɨ**ŋgrop/	[**mɨ**^{ŋ}grop ~ **mɨ̃**^{ŋ}grop]	'stone axe'

2.4.8 Vowel reduction

One of the challenges to determining the underlying form of Ambakich words is the great tendency of vowels in open syllables—and especially when in word-final position—to shorten and centralize. One effect of this vowel reduction is that phonemic distinctions are often neutralized. Thus, when word-final, /i/, /ɨ/, and /u/ may all be pronounced [ɨ]. Likewise, when word-final, /e/, /ɨ/, and /a/ may all be pronounced [ə]; /e/ and /a/ may both be pronounced [ɛ]; /u/ and /ɨ/ may both be pronounced [ɤ]; and /o/ and /a/ may both be pronounced [ɔ]. Generally, however, the occurrence of [i] or [ɪ] points to underlying /i/, the occurrence of [u] or [ʊ] points to underlying /u/, the occurrence of [e] points to underlying /e/, the occurrence of [o] points to underlying /o/, and the occurrence of [a] or [ʌ] points to underlying /a/. Thus, when these phonetic realizations are observed, they are generally indicative of the phonological form of the vowel.

2.4.9 Vowel epenthesis or vowel elision?

Another challenge in Ambakich phonology concerns the ambiguity between vowel epenthesis and vowel elision. That is, it is not always clear whether various apparent consonant clusters exist in the underlying form of a word or rather result from the phonetic deletion of an intervening non-low central vowel /ɨ/. Likewise, it is not always clear whether various apparent sequences of [CɨC] exist in this same form underlyingly or rather result from the insertion of an intervening non-low central vowel to break up an underlying consonant cluster. Since there are no known minimal pairs involving contrasts between /CɨC/ and /CC/ (at least not with two obstruent consonants), this remains an insoluble problem.

2.5 Syllable structure

Ambakich permits a variety of syllable shapes, including syllables either with or without onsets, syllables either with or without codas, and syllables with complex onsets and/or complex codas. The following syllable patterns are attested: V, CV, VC, CVC, CCV, CCVC, CVCC, CCVCC. Thus, we may speak of simple onsets (§2.5.1) and simple codas (§2.5.2), as well as complex onsets and complex codas—that is, consonant clusters (§2.5.3). It is not entirely clear whether there are true diphthongs in the language (§2.5.4).

2.5.1 Simple onsets

Syllables may lack onsets entirely, as in (40).

(40)	**a**	‘younger brother’	**e**	‘fish sp.’
	a.mbɨ	‘affine’	**e**.ŋgɨm	‘wallaby’
	am	‘old woman’	**em**	‘sun’
	ok	‘also’	**o**.nda	‘hunger’

These syllables thus begin with a nucleus (a vowel); only the non-high vowels /a-, e-, o-/ are permitted in such vowel-initial syllables when they are word-initial (i.e., /i-, u-, ɨ-/ are prohibited).

Alternatively, syllables may begin with a consonant as an onset preceding the nucleus, as in (41).

(41)	**mba**.pa	‘leaf’	**ko**.ndam	‘coconut shell’
	mbe	‘fat’	**me**	‘possum’
	nda.na	‘adze’	**mi**.mo	‘egg’
	ndu	‘poison’	**ni**	‘I’ [ɲi]
	ndʒi	‘vulva’	**nu**.ŋgun	‘two’
	ŋgi.ŋge	‘tree sp.’	**si**.no	‘root’
	ŋgɨ	‘Singapore taro’	**sɨ**	‘girl’
	ja	‘-self [REFL]’	**tʃe**	‘cloth’
	ji.no	‘hole’	**tʃi**.tʃor	‘pumpkin’
	jom	‘sago pancake’	**wa**	‘crocodile’
	ka	‘betel palm’	**wo**.tʃa	‘why?’

All consonants except /p/ and /r/ are permitted as word-initial onsets (/p/ and /r/ do not occur word-initially, although it is possible that they may be onsets for non-initial syllables). There are only very few instances of word-initial /n-/. With the exception of the postposition /no ~ notʃ/ ‘with [INST]’, these all precede a high vowel (and are realized as [ɲ]—before /i/—

or [ŋ]—before [u]—see examples 23 and 25). There are also only a few known instances of word-initial glides /j-/ and /w-/, whose status as consonants may be questioned (§2.3.2.3).

2.5.2 Simple codas

Syllables may lack codas entirely, as in (42).

(42)	a.**kɨ**	‘house’	**mɨ**	‘he, she, it’
	a.**na**	‘paddle’	ka.mba.**ndʒo**	‘child’
	mba.**tʃi**	‘ladder’	**ŋgu**	‘sickness’
	mbi	‘rat sp.’	**ŋge**	‘machete’

Any of the six vowels may occur as the nucleus of such an open syllable.

Alternatively, syllables may contain a consonant as a coda following the nucleus, as in (43).

(43)	**ndop**	‘hand’	**an**	‘fire’
	mbetʃ	‘gray hair’	ŋgu.**nur**	‘ant sp. (red ant)’
	mbo.**rik**	‘frog sp.’	ŋgɨ.**mai**	‘bird’ (?)
	mbɨ.**rom**	‘tree sp.’	ko.si.**rau**	‘pus’ (?)

All consonants except voiced oral occlusives /mb, nd, ŋg, ndʒ/ and the voiceless fricative /s/ are permitted as codas. Words such as *ŋgɨmai* ‘bird’ and *kosirau* ‘pus’ may be considered to end in closed syllables, only if the sequences written here as [ai] and [au] can be analyzed as /aj/ and /aw/, respectively (on the glides /j/ and /w/, see §2.3.2.3).

2.5.3 Consonant clusters

The permissible consonant clusters in onsets would appear to include the six possible combinations of a voiced stop /mb, nd, ŋg/ (as the first element) and either the liquid /r/ or the velar glide /w/ (as the second element)—thus: /mbr-, ndr-, ŋgr-, mbw-, ndw-, ŋgw-/. Complex onsets would also appear to include the four combinations of voiceless velar /k/ (as the first element) and any of /r, w, s, tʃ/ (as the second element)—thus: /kr-, kw-, ks-, ktʃ-/. (The clusters presented here that include /w/ assume, of course, that this is indeed a consonant, as opposed to the vocoid [u]). As mentioned in §2.4.9, consonant clusters involving obstruents are not contrastive with segments of the form /CɨC/.

The permissible consonant clusters in codas would appear to consist of the three voiceless occlusives (/p, tʃ, k/) preceded by their respective homorganic nasals ([m, n, ŋ])—thus: /-mp, -ntʃ, -nk/ (the velar nasal [ŋ] is underlyingly /n/, but velarizes to assimilate in

place with the following /k/). Although there are only a few clear examples of the complex codas /-mp/ and /-nk/, the complex coda /-ntʃ/ is fairly well attested.

It does not appear possible for sequences of more than two consonants to occur either in onsets or in codas. The consonant clusters presented here are not necessarily exhaustive (one challenge in determining the range of permissible clusters is the uncertainty surrounding vowel epenthesis and elision, §2.4.9). Furthermore, various sequences of consonants occurring across syllable boundaries are possible, but are not considered here.

The words in (44) provide examples of complex onsets with the liquid /r/ as the second consonant.

(44)	**mbr**a.na	‘sago stick’	**ŋgr**uk	‘fence’
	mbrɨp	‘foot’	**ŋgr**ɨ	‘inside’
	mbri	‘bat’	**ŋgr**u.ndep	‘spider’
	a.**mbr**a	‘spirit house’	a.**ŋgr**e.ndʒo	‘insect sp.’
	a.**mbr**ɨk	‘vegetable sp.’	mɨ.**ŋgr**op	‘stone axe’
	ndru	‘riverbank’	**kr**om	‘post’
	ndri.kok	‘four’	**kr**ɨp	‘fall (verb)’

Of these, the sequences /ndr-/ and /kr-/ are the least certain; indeed, the two examples of each provided in (44) are the only known occurrences, and it is possible that they have underlying central vowels intervening (e.g., [dɾu] ‘riverbank’ might be underlyingly /ndɨru/, [kɾom] ‘post’ might be underlyingly /kɨrom/, etc.).

The words in (45) provide examples of complex onsets with the velar glide /w/ as the second consonant.

(45)	**mbw**ai	‘snake’	**ŋgw**a	‘tomorrow’
	a.**mbw**am	‘sister’s daughter’	**ŋgw**etʃ	‘insect sp.’
	ndwer	‘insect sp.’	**kw**i	‘fish’
	ndwan	‘path’	**kw**o.mo	‘iris’

The validity of these consonant clusters is contingent on the validity of /w/ as a consonant, which is itself uncertain (§2.3.2.3). (There is also one attested form that may contain the sequence /mw/, a connective adverb *mwa* ‘thus’.)

The words in (46) provide examples of complex onsets composed of the voiceless velar /k/ as the first consonant and either of the two voiceless sibilants /s, tʃ/ as the second consonant.

(46)	**ks**un	‘meat’	**ks**a.ja	‘mosquito-squatter’
	ksin	‘mouth’	**ktʃ**i	‘near’
	ksa.nda	‘sugar glider’	**ktʃ**a	‘grind (verb)’

The words in (47) provide examples of complex codas. These all consist of voiceless stops preceded by homorganic nasals.

(47)	an.ka**ntʃ**	‘cheek’	mbi.tʃa**ntʃ**	‘bunch of betel nut’
	ma.ŋgra**ntʃ**	‘light (not heavy)’	ko.pa**ntʃ**	‘pelvis’
	ŋgwa**mp**	‘stomach’	mbɨ.ko**nk**	‘skin’ [bɨkoŋk]

There is only one attestation for each of /-mp/ and /-nk/.

2.5.4 Diphthongs

The nature of vowel sequences in Ambakich is not always clear, due in part to the uncertain status of glides in the language (§2.3.2.3). Sometimes there are varying pronunciations of a single form, such that it is difficult to discern whether an underlying disyllabic VV sequence is being diphthongized (into a single syllable), or whether an underlying diphthong (or, perhaps, sequence of vowel-plus-glide) is being pronounced across two syllables. Still, the following apparent vowel sequences have been observed: /ai, ei, oi, au, ou/. That is, the only permitted vowel sequences are those that begin with a non-high vowel /a, e, o/ and end with either a high front vowel /i/ or a high back vowel /u/ (i.e., the two glides in the language), with the sequence /eu/ being unattested, despite satisfying these two criteria. The words in (48) illustrate these five vowel sequences.

(48)	**ai**maŋ	‘ant sp.’	apɨnd**oi**	‘bad’
	ŋgɨm**ai**	‘bird’	k**oi**	‘vegetable sp.’
	kond**ai**	‘worm’	k**oi**n	‘leech’
	k**ai**mbo	‘kidney’	aŋgw**au**	‘magic’
	mbɨrŋg**ei**	‘yellow’	**au**r	‘tooth’
	ŋgun**ei**	‘black’	k**ou**r	‘string bag’

Of these, the forms with /ai/ are by far the most common, although there are a decent number of forms with /oi/ as well. The other vowel sequences appear to be fairly uncommon: the only known examples of /ou/ are found in the noun /kour/ ‘string bag’ and the verb /kou/ ‘sleep’.

Some sequences have been observed to monophthongize—namely, /ai/ or /ei/ > [e], a

common process among the languages of the region (49).

(49)	/mund**ai**/	[mu^{n}dai ~ mu^{n}d**e**]	‘muscle’
	/aw**ai**/	[awai ~ aw**e**]	‘mother’s brother’
	/ŋgun**ei**/	[gunei ~ gun**e**]	‘black’

3. Conclusion

I have intended here to provide a brief overview of Ambakich phonology as well as some basic background information on the language. I hope that this sketch, along with the following word lists in the appendices, will prove helpful in the classification of languages of northeastern New Guinea.

Ambakich, like many of the languages of New Guinea, is endangered, as it is not being acquired by the younger generations, and only older speakers are now fluent. Further research into the grammatical structures of the languages would therefore need to be conducted soon, while there are still fluent speakers.

Abbreviations

1	1st person	INS	instrumental	PL	plural
2	2nd person	INTS	intensive	PNG	Papua New Guinea
3	3rd person	IPFV	imperfective	PROH	prohibitive
C	consonant	IRR	irrealis	PROX	proximal
COM	comitative	LLG	Local-Level Government (area)	REFL	reflexive
DIST	distal			SEQ	sequential
DU	dual	MED	medial	SG	singular
EXCL	exclusive	NEG	negative	SIM	simultaneous
FOC	focus	NPL	non-plural	TAM	tense-aspect-mood
INCL	inclusive	OBL	oblique	TP	Tok Pisin
INDF	indefinite	PFV	perfective	V	vowel

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Appendix 1: Ambakich word list (Yaut village)

The following is a list of 630 lexical items in the Ambakich language, as spoken in Yaut village. These are organized by word class, since words of different lexical class may exhibit different phonotactic patterns. That said, no morphosyntactic claims are being made here; although I am fairly certain of the validity and membership of the categories "noun" and "verb" in Ambakich, I do not have evidence for a separate class of "adjectives", and

these are organized strictly based on semantic grounds (i.e., they are property-denoting words); likewise, the categories "adverb", "interrogative", and "quantifier" should be treated simply as heuristics. When deemed informative, phonetic versions of phonemic forms are given in brackets following the English translations. Tok Pisin (TP) translations are also occasionally provided, as well as other notes.

Ambakich nouns

a	'younger brother'
ai	'lime (calcium hydroxide) (TP *kambang*)' (areal loan)
aimaŋ	'ant sp. (black ant)' (loan?) (/aiman/?)
ainawai	'fishing spear'
aja	'saliva, spit'
ajano	'headdress'
aje	'boil, blister'
ajɨr	'rash, scabies' [adʒɨɾ]
ajom	'soup'
aka	'hip'
akatʃ	'palm flower'
akino	'claw'
akɨ	'house'
akɨ mbapak	'wall of a house'
akɨ ŋgraŋ	'roof of a house'
akɨ ŋgrɨ	'floor of a house'
akɨn	'groin'
akɨnok	'bird sp. (small wildfowl)'
akɨr	'seedling, sucker' (cf. *mbakɨr* 'sprout, bud')
akuwa	'ring (earring, nosering)'
akwe	'table, platform'
am	'old woman, grandmother'
amba	'papa' [aba] (term of address)
ambai	'female (animal)'
ambar	'side' [abʌl]
ambatʃ	'mother's sister (maternal aunt)'
ambɨ	'affine, in-law'
ambɨr	'men [PL]' [abɨl] (suppletive plural for *kamboi* 'man [NPL]')
ambotʃ	'mound (as for planting yams)'
ambra	'spirit house, men's house (TP *haus tambaran*)'
ambrɨk	'vegetable sp. (*Gnetum gnemon*) (TP *tulip*)'
ambwam	'man's sister's daughter (niece)'
amɨ	'water'
amɨtʃap	'chin' [amɨtap]
amoja	'gallbladder'
amrak	'frog sp. (lives in the swamp)'
an	'bird sp. (hornbill bird) (TP *kokomo*)'
an	'fire'

ana	‘paddle’
anatʃ	‘sister’
anatʃo	‘woman’ (also /anetʃo/)
andatʃ	‘mix of betel nut, betel pepper, and lime (TP *red buai*)’
andɨr	‘vine sp.’
anɨ	‘talk, speech, story’
ankantʃ	‘cheek’ [aŋkantʃ]
ankantʃ katʃi	‘jaw’ (literally ‘head of the cheek’)
ankur	‘question’ [aŋkul]
antʃan	‘fish sp.’
antʃi	‘body’
antʃɨŋe	‘snake sp.’ [antɨŋe] (loan?)
antʃɨwama	‘spirit sp. (TP *masalai*)’ [antɨwama] (loan?)
aŋgar	‘rope, string’ [aɣʌl]
aŋgir	‘gecko’ [agiɾ] (probably an areal loan; cf. Tayap/Taiap <agin> [1])
aŋgɨn	‘star; firefly’
aŋgrendʒo	‘insect sp. (dragonfly)’ [aŋgɾɛndʒo]
aŋgri	‘ligament, vein’
aŋgwau	‘magic’
apa	‘bunch (of bananas)’
apɨ	‘top’ (also *ndɨmok*)
aprak	‘fungus’
ara	‘granddaughter’
arpatʃ	‘gums’
asa	‘rattan cane (TP *kanda*)’
asan	‘bowstring’
atʃɨkratʃ	‘tadpole’
atʃɨmo	‘chest’
atʃɨmo kɨpɨn	‘sternum’
atʃo	‘father’
au	‘old man, grandfather’ [aw ~ a.u]
aur	‘tooth’
awa	‘tusk’
awai	‘bird sp. (cockatoo) (TP *koki*)’
awai	‘mother’s brother (maternal uncle) (TP *kandere*)’ [awai ~ awe]
awaja	‘hair’
awan	‘perspiration, sweat’
awepa	‘night wind’
awon	‘eye of a needle’
e	‘fish sp.’
eja	‘ginger sp. (tall ginger) (TP *gorgor*)’
eja	‘grassland’
ekrek	‘butterfly’
ekwar	‘rat sp. (small)’
ekwar juwa	‘cassava’ [ɛkwaɾdʒɔwa] (literally ‘rat yam’)

[1] From Kulick and Terrill (2019:353); cf. also: Waran/Banaro <aŋgə́rɑ> ‘lizard’ (Laycock 1970a:858), Mekmek <ŋgərɑ́> ‘lizard’ (Laycock 1971b:3146).

em	‘sun, day(time)’
eman	‘sago palm’
eman	‘liver’
emar	‘song (TP *singsing*)’
emban	‘cassowary’
emɨr	‘waistcloth, belt’
emtʃan	‘knife (small)’
ena	‘loincloth, man’s grass skirt (TP *malo*)’
endom	‘mango’
eneja	‘man’s sister’s son (nephew)’ (reciprocal relation of *awai*)
enɨ	‘banana (plant or fruit)’
eŋgar	‘dry season’ [eɣal]
eŋgɨm	‘wallaby (TP *sikau*)’ [ɛgɨm] (probably an areal loan; cf. Murik <yɑɣíñ>[2])
epo	‘bean’
er	‘ashes (white); salt’ (also /ŋgu er/ for ‘salt’)
erer	‘dog’
eromba	‘bird sp. (eagle, hawk) (TP *tarangau*)’
eruwa	‘joint’
ewar	‘louse’
itʃa	‘mama’ (term of address) [itʃa ~ ita]
jak	‘sago flour’ [ɲak ~ jak]
jek	‘earthquake’
jen	‘egg yolk’
jerima	‘grandson’
ji	‘name’ [dʒi]
jin	‘ground, earth, land’ [dʒin]
jino	‘hole’ [dʒino]
jip	‘palm sp.; flattened palm stem (TP *limbum*)’ [dʒip]
jir	‘young betel nut stage’ [dʒiɾ]
jɨnɨmpan	‘snake sp.’ [dʒɨnɨmpan]
jom	‘sago pancake’
jur	‘eel’ [dʒuɾ]
jur enɨ	‘banana sp. (long)’ (literally ‘eel banana’) [dʒuɾ enɨ]
juwa	‘yam’ [dʒʊwʌ ~ ndʒo]
juwapa	‘insect sp. (small millipede)’ [dʒuwapa]
juwi	‘ant sp. (large white ant)’ [dʒuwi]
ka	‘betel palm (*Areca catechu*) (TP *buai*)’
ka	‘sago jelly’
kaimbo	‘kidney’
kainak	‘sneeze’
kaja	‘older brother’
kaja	‘skirt, woman’s grass skirt (TP *purpur*)’ [kaŋa]
kaja	‘pick-axe (for hacking at sago palms)’ [kaŋa]
kaja mbo	‘pick-axe striking end’ (literally ‘fruit of the pick-axe’) [kaŋabo]
kajai	‘eye mucus’ [kaŋai]

[2] From Laycock (1970b:930), translated as ‘tree/ground kangaroo’ (the alternative form <yɑgə́in> is also given); cf. also: Giri/Kire <igʉm> ‘wallaby’ (Z’graggen 1972:123).

kajam ‘tree sp. (fig tree) (TP *fikus*)’ [kaŋam]
kajampa ‘papaya’
kajampa ‘fish sp. (catfish) (TP *mausgras pis*)’
kajawa ‘perfume (TP *sanda*)’
kajok ‘frog sp. (lives in water)’
kajop ‘comb’
kakar ‘lemon, lime (TP *muli*)’
kamatʃ ‘*limbum* sp. (stem of the areca palm) (TP *buai limbum*)’
kambandʒo ‘child (anyone’s)’ [qambandʒo]
kambɨ ‘branch’
kamboi ‘man [NPL]’ (non-plural equivalent of *ambɨr* ‘men [PL]’)
kambum ‘betel nut (*Areca catechu*) fruit (TP *buai*)’
kamɨ ‘grub sp. (lives in dry sago)’
kamɨ ‘yam sp. (TP *mami*)’
kamɨr ‘scalp (of the head)’
kamu ‘food’
kan ‘ear’ (variant of *kɨr*, used in the verb ‘hear’)
kanama ‘snake sp.’
kanden ‘garden’ (loan from Tok Pisin *gaden* ‘garden’)
kandɨ ‘jungle, woods, forest’
kandɨ me ‘cuscus (TP *black kapul*)’ (literally ‘jungle possum’)
kandɨpwa ‘spirit sp. (spirit of the jungle)’
kandup ‘axe (metal)’
kankatʃ ‘bottom’ [ʔaŋkatʃ]
kankok ‘bridge’ [kaŋkok]
kanok ‘knee’
kantot ‘mushroom’ (loan?)
kapamo ‘feather’ [qapʌmɔ ~ ʔapʌmõ]
kapɨp ‘bedbug’
kapot ‘taro (swamp taro)’ (loan?)
kara ‘sky, cloud’
karar ‘game, play’
karatʃ ‘bone’
karetʃ ‘dream’
karɨ ‘mosquito net’
karɨn ‘lower leg’
katʃ ‘laughter’
katʃi ‘head’
katʃi komatʃ ‘bald spot’ (literally ‘nail of the head’)
katʃi natʃ ‘back of the skull’
katʃi ne ‘brain’
katʃi no ‘nape of the neck’
katʃinop ‘chair’
katʃɨrak ‘scorpion’
kawai ‘tree sp. (*Octomeles sumatrana*) (TP *erima*)’
kawan ‘lightning’
kawatʃine ‘banana sp. (hard)’
kɨpa ‘breadfruit’

kɨpɨ	‘nose’
kɨpo	‘sago pith’
kɨr	‘fog’
kɨr	‘ear’ (also *kan*, in the verb ‘hear’)
kɨr amɨ	‘dew’ (literally ‘fog water’)
kɨrmen	‘hiccup’
kɨʧar	‘bamboo sp. (used to store food)’
kɨʧom	‘mouth, lips; beak’
koi	‘penis’
koi	‘vegetable sp. (cress) (*Ipomoea aquatica*) (TP *kango*)’
koi juwa	‘sweet potato (TP *kaukau*)’ [kɔidʒo] (literally ‘cress yam’)
koikanʧ	‘navel, umbilical cord’
koin	‘leech; snail’
kojep	‘fan’
kojo	‘vegetables, greens’
kokan	‘middle, trunk’
kokimoi	‘segment (of sugarcane)’
kokɨr	‘banana flower’
kokor	‘chicken’ (probably an areal loan, possibly onomatopoetic)
kom	‘insect sp. (wasp)’
komai	‘band, ring, armband, joint for pick-axe’
komatʃ	‘nail, fingernail’
komi	‘boys [PL]’ (plural form of *komo* ‘boy [NPL]’)
komɨrop	‘tree sp. (Tahitian chestnut) (*Inocarpus fagifer*) (TP *aila*)’
komo	‘boy [NPL]’ (non-plural form of *komi* ‘boys [PL]’)
kondai	‘worm’
kondam	‘coconut shell; bowl’
kontʃɨ	‘bow, bow and arrow’
kontʃɨ	‘crayfish’
koŋgan	‘tail’
kopantʃ	‘pelvis, pubis’
korak	‘vegetable sp. (TP *aibika*)’
korarepuwa	‘baby’
korimbe	‘refuse water when washing sago pith’
koritʃ	‘breast’
koritʃ kɨpɨ	‘nipple’ (literally ‘nose of the breast’)
korom	‘upper leg, lap’
koror	‘trash’
kosirau	‘pus’
kotʃ	‘vomitus’
kotʃɨr	‘shelf (placed above a fire)’
kour	‘string bag, net bag (TP *bilum*)’
kowa	‘mosquito bite’
krom	‘post’ (/kɨrom/?)
ksa	‘coconut (palm or fruit)’
ksaja	‘mosquito-swatter, broom’
ksan	‘coconut meat; egg white’
ksanda	‘sugar glider’

ksaŋ ‘basket’ (/ksan/?) (likely loan from Waran/Banaro <kʰʌˈtuŋ> ‘net bag’ [3])
ksin ‘mouth (and area surrounding), lower face; language’
ksip ‘coconut flower sheath (TP *pandol*)’
ksu ‘pig’
ksun ‘meat, flesh; animal’
ku ‘packet (of jellied sago, wrapped in a leaf)’
kumbijembe ‘vegetable sp. (amaranth) (TP *aupa*)’
kun ‘upper lip’
kuɲam ‘spirit sp.’ (possibly loan from Waran <koñim> ‘spirit of nature’ [4])
kurɨ ‘earwax’
kutʃen ‘cough, phlegm’
kwi ‘fish’
kwomo ‘iris, pupil’
kworo ‘snore’
maja ‘spear; fin’
mamban ‘pan’
mambar ‘stand (use to hold a pot over the fire)’
mambɨn ‘nut sp.’
mambur ‘basket (put on the shoulder to carry sago)’
mamija ‘snake sp.’
mamritʃ ‘bird sp. (owl)’
mana ‘piece’
manda ‘sword grass (TP *kunai*)’
mandʒɨrantʃ ‘insect sp. (grasshopper)’ [mandʒɨlantʃ]
manɨ ‘sago shoot’
mano ‘buttress root’
masoka ‘banana leaf sheath’
mbaje ‘coconut husk’
mbajer ‘hot water’
mbaka ‘stick; pick-axe handle’
mbakar ‘belch, burp’
mbakɨr ‘sprout, bud’ (cf. *akɨr* ‘seedling, sucker’)
mbaŋga ‘woven fronds (small) (TP *pangal*)’ [baɣa]
mbapa ‘leaf’
mbapatʃ ‘upper arm’
mbapɨn ‘armpit’
mbapɨrak ‘wing’
mbaritʃ ‘coconut bark fibers; sago strainer’
mbatʃi ‘ladder, steps’
mbatʃitʃ ‘bird sp. (duck)’
mbawar ‘woven fronds (large) (TP *pangal*)’
mbe ‘fat, grease’ [mbe ~ be]
mbembe ‘flying fox, large bat’ [beβe]
mberembere ‘frog sp.’
mbetʃ ‘gray hair’

[3] From Davies and Comrie’s (1985:301) word list.
[4] From Z’graggen’s (1972:20) word list.

mbewa	‘ribs’
mbi	‘rat sp.’
mbijer	‘insect sp. (centipede)’
mbijom	‘vegetable sp. (*Erythrina variegata*) (TP *balbal*)’
mbiram	‘*limbum* palm sp.’
mbisir	‘flatus, fart’
mbitʃantʃ	‘bunch of betel nut’
mbɨkan	‘lizard’
mbɨkɨrmona	‘tree sp. (*Calophyllum* spp.) (TP *kalopilum*)’
mbɨkok	‘rat sp. (lives in water)’
mbɨkonk	‘skin’ [bɨkoŋk]
mbɨr	‘swamp’
mbɨrkako	‘banana sp. (long)’
mbɨrmbɨr	‘bile, venom’
mbɨrom	‘tree sp. (Hibiscus tiliaceus) (TP *mangas*)’
mbɨsi	‘sap’
mbɨsinda	‘fish sp. (small)’ [psinda]
mbɨsir	‘mud’ [psil]
mbɨsu	‘milk’
mbo	‘turtle’ [mbo ~ bo]
mbo	‘fruit, seed, nut’ (also *mbum*, in the compound for ‘betel nut’)
mboka	‘reeds (TP *tiktik*)’
mbokɨr	‘hoof’
mbonda	‘pond’
mbonɨ	‘clavicle’
mbopa	‘ball’
mbopena	‘comb (of a rooster)’
mbopɨr	‘scale (of a fish)’
mborik	‘frog sp. (lives in grass)’
mbowatʃ	‘mature coconut stage’
mbran	‘moon’
mbrana	‘sago stick (used to stir sago jelly)’
mbri	‘bat (small bat)’
mbrɨmar	‘shin’
mbrɨp	‘foot, leg’
mbrɨp eruwa	‘ankle (joint)’
mbrɨp katʃi	‘big toe’ (literally ‘head of the foot’)
mbrɨp komatʃ	‘toenail’
mbrɨp ŋgraŋ	‘top of the foot’
mbrɨp ŋgrɨ	‘sole of the foot’
mbrɨp ombɨr	‘toe’ (literally ‘digit of the foot’)
mbrɨp ope	‘anklebone’
mbrɨpa	‘palm with flowers’
mbrum	‘wound, sore’
mbukatʃ	‘fire tongs, fork’
mbum	‘fruit, seed, nut (?)’ (variant of *mbo*, found in ‘betel nut’)
mbumaka	‘flame’
mbur	‘grub sp.’

mbwai ‘snake’
me ‘neck’
me ‘possum (TP *kapul*)’ [mɛ ~ mɛ̃]
mi ‘feces, excrement’ [mi ~ mɪ ~ mĩ]
mɨjok ‘heel (of the foot)’
mimo ‘egg’
mir ‘tongue’
mirak ‘vine’
mɨmbar ‘scoop (of sago)’
mɨndɨr ‘stone, rock’ (probably an areal loan; cf. Kyenele/Miyak <mɨndəm> ‘stone’[5])
mɨŋgrop ‘stone axe’ [mɨŋgɾop ~ mɨ̃ŋgɾop]
mɨra ‘pandanus’
mɨra ‘urine’
mɨrar ‘forehead, face’
mɨrɨ ‘pot for stirring sago (clay pot)’
mɨror ‘spirit sp. (ghost)’ (possibly loan from Waran <mʉrəm> ‘spirit of ancestors’[6])
mojajir ‘fish sp.’ [moŋadʒiɭ]
momba ‘heart’
mombaja ‘scab’
momban ‘fish sp.’
mombɨr ‘fish sp.’
mombur ‘young coconut, drinking coconut (TP *kulau*)’
mona ‘smoke’
monan ‘sugarcane, sugar’
moŋgepa ‘banana sp. (small, sweet)’
mositʃ ‘bladder’ [mosis]
mowa ‘thatch (TP *morota*)’ [moŋa ~ mõŋʌ]
mowatʃ ‘shoulder’ [moŋatʃ ~ mowatʃ ~ mowat]
muja ‘bandicoot’ [muŋa]
mundai ‘muscle’ [mundai ~ munde]
mundɨ ‘scar’
mundɨmo ‘betel pepper (TP *daka*)’ (also *ndɨmo*)
mundor ‘mucus’
munduwa ‘fish sp. (perch) (TP *nilpis*)’
ndaja ‘tree sp. (Java almond tree) (TP *galip*)’
ndana ‘adze (tool for carving canoes)’
ndandɨ ‘maggot’
nden ‘rain’
ndeno ‘fuzz (as found on some plants)’
ndija ‘fly sp. (housefly)’
ndijen ‘tree sp. (okari nut tree) (TP *talis*)’
nditʃatʃ ‘betel pepper vine (TP *rop daka*)’
ndɨmo ‘betel pepper (TP *daka*)’ (also *mundɨmo*)
ndɨmok ‘top’ (also *apɨ*)

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[5] From Davies and Comrie’s (1985:287) word list (language name given as “Kyaimbarang”); cf. also: Taiap/Tayap <mindia> ‘stone axe’ (Kulick and Terrill 2019:389).
[6] From Z’graggen’s (1972:21) word list.

ndoja	‘wind, breath’
ndok	‘stinging nettle sp. (TP *salat*)’
ndom	‘fly sp. (blowfly)’
ndomai	‘snake sp.’
ndoŋgan	‘elbow’
ndoŋgwa	‘bird sp. (crowned pigeon) (TP *guria*)’
ndop	‘hand, arm’
ndop katʃi	‘thumb’ (literally ‘head of the hand’)
ndop ŋgraŋ	‘back of the hand’
ndop ŋgrɨ	‘palm of the hand’
ndop oin	‘pinky finger, little finger’
ndop ombɨr	‘finger’ (literally ‘digit of the hand’)
ndositʃ	‘forearm’ [ndosis]
ndru	‘riverbank’ (/ndɨru/?)
ndu	‘eye’ (variant of *ndun*, used in the verb ‘look’)
ndu	‘poison’
ndun	‘eye’ (also *ndu*, in the verb ‘look’)
ndun	‘river’
ndupatʃ	‘temple (of the head)’
nduwap	‘betel pepper leaf (TP lip *daka*)’
ndwan	‘path, road’
ndwer	‘insect sp. (large millipede)’
ndʒak	‘mother; father’s sister (paternal aunt)’ [ndʒak]
ndʒi	‘vulva’ [ndʒi]
nin	‘odor’ [ɲin]
nirok	‘bird sp. (bird of paradise) (TP *kumul*)’ [ɲirok]
niɨjai	‘gourd used to store lime’ [niɲai]
nu	‘fish sp. (TP *bikmaus*)’ [ŋu]
nun	‘grass’ [ŋun]
nuwa	‘ashes (black)’ [ŋua]
ŋgaja	‘tree sp. (ironwood tree) (TP *garamut diwai*)’ [gaŋa ~ gaja] (final V uncertain)
ŋgakɨ	‘frog’
ŋgar	‘frond (of coconut)’
ŋgatʃ	‘guts, belly’ [ŋgatʃ ~ gatʃ]
ŋgatʃ mbaka	‘intestines’ (literally ‘stick of the guts’)
ŋge	‘machete, large knife’
ŋgijan	‘ginger sp. (TP *kawawar*)’
ŋgijok	‘mask’
ŋgiŋge	‘tree sp. (large hardwood tree) (TP *ton*)’
ŋgiŋgwatʃ	‘creek, ditch’
ŋgirŋgatʃ	‘back (of the body); spine of a frond’
ŋgɨ	‘Singapore taro (*Xanthosoma* spp.) (TP *kongkong*)’
ŋgɨka	‘ant sp. (termite, white ant)’
ŋgɨmai	‘bird’
ŋgɨman	‘husband; male (animal)’
ŋgɨmba	‘morning’ [gɨbʌ]
ŋgɨmboro	‘night’ [gɨbɔro]
ŋgɨmbrɨk	‘grub, sago grub’

ŋgɨmbu	‘*garamut* drum (a large slit drum)’ [gɨbu]
ŋgɨmŋgai	‘banana sp. (sweet)’
ŋgɨmu	‘canoe’ [gɨmʊ ~ gmũ]
ŋgɨndan	‘snake sp.’ [gɨdʌn]
ŋgɨr	‘cane grass (TP *pitpit*)’
ŋgoja	‘thorn, needle’ (also /ŋgwaja/)
ŋgrandʒam	‘corn’ [gradʒam] (possibly loan from French *graine* ‘grain’)
ŋgraŋ	‘outside; top or back (of something)’ (loan?) (/ŋgran/?)
ŋgrɨ	‘inside, bottom’
ŋgrɨn	‘shadow, shade’
ŋgruk	‘fence’
ŋgrundep	‘spider’
ŋgu	‘sickness’
ŋgumɨrɨ	‘pot’
ŋgunai	‘*kundu* drum (a small hand drum)’
ŋgunda	‘enemy’ [gudʌ]
ŋgunɨ	‘mosquito’
ŋgunur	‘ant sp. (red ant) (TP *karakum*)’
ŋgura	‘decoration (TP *bilas*)’
ŋgwa	‘fish trap’
ŋgwamp	‘stomach’
ŋgwan	‘tree sp. (ironwood tree) (TP *kwila*)’
ŋgwankɨn	‘banana sp. (long, sweet)’ [gwaŋkɨn]
ŋgwar	‘hearth, stove’
ŋgwetʃ	‘insect sp. (bee)’
oiwap	‘dead or dry palm’
okija	‘insect sp. (caterpillar)’
okinap	‘basket (carried like a bag)’
okindɨ	‘wild betel pepper (TP *wel daka*)’
okɨr	‘bamboo sp. (used to build houses)’
oma	‘wife’
ombɨn	‘buttocks’
ombɨŋep	‘bird sp. (dove, pigeon) (TP *balus*)’ (loan?)
ombɨr	‘digit (finger or toe)’
ona	‘bird sp. (large wildfowl)’
onda	‘hunger’
ondɨ	‘tree; thing’
ondɨ mbɨkonk	‘bark’ (literally ‘skin of the tree’)
onka	‘bunch (of coconuts)’ [oŋka]
onke	‘throat’ [oŋke] (also /onkwe/ [oŋkwe])
onop	‘village’
onop opai	‘cemetery’ (literally ‘big village’)
oŋgam	‘flower’
oŋgambo	‘crab’
oŋgar	‘white person’
opɨ	‘mountain’
orik	‘trap for catching land animals’
ormotɨm	‘yam sp. (wild)’

osir	‘Malay apple (*Syzygium malaccense*) (TP *laulau*)’
sin	‘blood’
sino	‘root’ [ʃino ~ sino]
sɨ	‘girl’
suwa	‘bird sp. (parrot) (TP *kalangal*)’
tʃan	‘arrow shaft’
tʃandam	‘banana sp. (long)’
tʃe	‘cloth, bed sheet’
tʃi	‘scrotum’
tʃi mbo	‘testicle’ (literally ‘fruit of the scrotum’)
tʃim	‘Jew’s harp’
tʃin	‘machete handle’
tʃitʃor	‘pumpkin’
tʃɨm	‘tattoo’
tʃɨmai	‘friend’
tʃuke	‘tobacco’ (areal loan) (also /tʃukwe/)
tutep	‘ant sp. (black ant)’ (possibly loan from Taiap/Tayep <rewitoto> ‘black ants’ [7])
wa	‘crocodile’
wawa	‘chewed-up betel nut’

Ambakich verbs

am	‘eat’
an	‘give’ (irregular irrealis form of *ar*)
andɨ	‘scratch, scrub’
apɨ	‘pull out, harvest’
ar	‘give’ (the irrealis form is *an*)
atʃ	‘hit, shoot; do, act’
e	‘hit, kill’
ep	‘be, be at (be located at)’
er	‘come’ (suppletive irrealis form of *si*)
jɨ	‘take, get’ [dʒɨ] (this verb form is used with plural objects; cf. *tʃɨ* ‘take, get’)
ka	‘put’
kam-	‘sew’ (irregular irrealis stem of *kan*)
kan	‘sew’ (the irrealis form is *kamɨn*)
kan akɨ	‘hear’
kano	‘fall’ (used with plural subjects?)
katʃenaka	‘stand’ (also *kratʃ*)
kɨ	‘talk, speak, tell’
kɨp	‘die’ (also *ŋgu*)
kopɨ	‘sweep’
kotʃ atʃ	‘vomit’ (literally ‘do vomitus’)
kou	‘sleep, lie down’
kratʃ	‘stand’ (also *katʃenaka*)
krɨ	‘fall’ (used with non-plural subjects?)
ktʃa	‘grind (coconut)’

[7] From Kulick and Terrill (2019:419).

ktʃɨ	‘build, tie’
ma	‘go’ (the perfective form is *masap*)
mambar atʃ	‘crush, mash’
masap	‘go’ (irregular perfective form of *ma*)
mbawa	‘walk’
nde	‘dance’
ndu-ʧar	‘look’ (literally ‘give eye to’)
ndumaka	‘fly’
ŋgi	‘see, look at’
ŋgu	‘die’ (also *kɨp*)
oi	‘cut’
ok	‘scrape (sago)’
onda ma	‘be hungry’ (literally ‘hunger goes [to someone]’)
op	‘rain’
se	‘sit’
si	‘come’ (the irrealis form is *er*)
tʃɨ	‘take, get’ (this verb form is used with non-plural objects; cf. *jɨ* ‘take, get’)
wa	‘burn, cook’
wuru	‘carve, blow (of wind)’ [wuɾu ~ uɾu]

Ambakich adjectives

ajon	‘good’
akɨrɨn	‘new’
ambrikmoi	‘thick’
aŋgijaŋga	‘left (not right)’
aŋgroʧ	‘old (of people)’
apɨndoi	‘bad’
apɨr	‘far’
embijatʃ	‘short’ [embijat]
erɨpatʃ	‘wide’ [elɨpat]
ji	‘empty’ [dʒi]
jɨr	‘old; soft’ [dʒɨl]
kambombo	‘smooth’
karuŋgwa	‘sharp, ripe’
katʃap	‘full’
kawatʃ	‘hard, strong’ (cf. *karatʃ* ‘bone’)
komondʒo	‘small, young’ [qɔmondʒo] (cf. *komo* ‘boy [NPL]’)
konatʃ	‘white’
ktʃi	‘near, close’ (also *kuratʃa*)
kundanda	‘long’
kuraʧa	‘near, close’ (also *ktʃi*)
kutʃɨr	‘heavy’ [kutɨl]
mandʒandʒuwa	‘bitter’
maŋgrantʃ	‘light (not heavy)’
mbajai	‘red’
mbar	‘clean’
mbaroro	‘thin’

mbawa	‘cold’
mbeʧo	‘hot’
mbɨrŋgei	‘yellow, orange’
mbopur	‘rough’
mɨndar	‘sweet’
mɨnin	‘rotten’ [mɨɲin]
mɨraʧ	‘wet’
moŋgrop	‘round’
ndinaʧ	‘dry’
ndona	‘right (not left)’
ŋgunei	‘black, blue, green; dirty’ [gunei ~ gune]
ombususuwa	‘narrow’
opai	‘big’
opambe	‘huge’

Ambakich pronouns

ni	‘I [1SG]’ [ɲi]
mbɨ	‘you [2SG]’
mɨ	‘he, she, it [3SG]’
anɨ	‘we [1PL]’
onɨ	‘you [2PL]’
arɨ	‘they [3PL]’
au	‘-self [INTS]’ (intensive pronoun; e.g., ‘He *himself* did it.’)
ja	‘-self [SG.REFL]’ [ɲa] (reflexive pronoun, e.g., ‘He saw himself.’)
nin	‘-selves [PL.REFL]’ [ɲin] (reflexive pronoun, e.g., ‘They saw themselves.’)

Ambakich deictics

ŋga	‘this [NPL.PROX]’ (demonstrative pronoun)
ma	‘that [NPL.MED]’ (demonstrative pronoun)
anda	‘that [NPL.DIST]’ (demonstrative pronoun)
ŋgɨ-	‘this [NPL.PROX]’ [gɨ- ~ g-] (prenominal demonstrative determiner)
mɨ-	‘that [NPL.MED]’ [mɨ- ~ m-] (prenominal demonstrative determiner)
andɨ-	‘that [NPL.DIST]’ [a^{n}dɨ- ~ a^{n}d-] (prenominal demonstrative determiner)
ŋgan	‘this [NPL.PROX]’ (postnominal demonstrative determiner)
man	‘that [NPL.MED]’ (postnominal demonstrative determiner)
andan	‘that [NPL.DIST]’ (postnominal demonstrative determiner)
ŋgin	‘these [PL.PROX]; here’
arin	‘those [PL.MED]’
andin	‘those [PL.DIST]; there’
ando	‘thither, to there’ (< *andɨ-* ‘that [NPL.DIST]’ + *o* ‘to, toward’)

Ambakich numerals

ko	‘one; a, an [INDF]’ (used attributively or as indefinite marker) [ko ~ kɔ ~ qɔ]
koŋ	‘one’ (used in counting) [kɔŋ ~ qoŋ] (/kon/?)
nuŋgun	‘two’ [nu^{ŋ}gun]
sok	‘three’

ndrikok	‘four’ (/ndɨrikok/?)
ndop koŋ	‘five’ (/ndop kon/?) (literally ‘one hand [i.e., five fingers]’)

Ambakich quantifiers

ndʒak	‘many’
ŋgɨmen	‘some’
ok	‘all, whole’ (same form as ‘also, too’)

Ambakich adverbs

mɨman	‘yes’ (affirmative response word)
ambakitʃ	‘no’ (negative response word) [a^{m}bakitʃ ~ a^{m}bakis]
wune	‘not [NEG]’ (clausal negator, precedes predicate) [wune ~ une]
wa	‘not [NEG]’ (negator for predicate nominals, precedes complement)
anak	‘don’t! [PROH]’ (prohibitive marker)
atʃɨpe	‘already, before’ [atɨpe ~ atape]
nirka	‘afterwards, later’ [ɲilka]
ŋguna	‘today, now’ (also /ŋgwana/)
ŋgwa	‘tomorrow’
nime	‘yesterday’ [ɲime]
kamik	‘now’
kɨ	‘again’
nda	‘soon’
ok	‘also, too’ (same form as ‘all’)
mok	‘very’
mwa	‘thus, so’

Ambakich interrogatives

okɨ	‘who?’
wan	‘what?; where?’
wo	‘how?’
watʃa	‘why?’
wija	‘when?’

Ambakich postpositions

e	‘in, at, on, around’
o	‘to, toward’ [o ~ a]
are	‘in, into’ [are ~ -re]
tʃire	‘from’
kɨn	‘with [COM]’ (comitative, i.e., ‘together with’)
no ~ notʃ	‘with [INS]’ (instrumental, i.e., ‘by means of’)
ana ~ anaka	‘for, for the sake of, on account of’ (benefactive)
nɨrɨk	‘behind’ (cf. *nirka* ‘afterwards, later’)
kantʃ ~ kantʃa	‘before, in front of’

Ambakich bound morphemes

-akitʃ	'[NEG]' [-akitʃ ~ -kitʃ ~ -itʃ ~ -ʈʃ] (verbal suffix: with preceding negator)
-a	'[SIM]' (simultaneous dependent clause marker) (?)
-e	'[SEQ]' (sequential dependent clause marker) (?)
-ɨ	'[IPFV]' (imperfective [or present?] TAM suffix)
-ap ~ -p	'[PFV]' (perfective [or past?] TAM suffix)
-r ~ -n	'[IRR]' (irrealis [or future?] TAM suffix)
-i ~ -ɨr	'[PL]' (nominal plural marker)
-tʃo ~ -ndʒo	nonproductive kinship suffix? (cf. *atʃo* 'father', *kambandʒo* 'child')
-n	topic-marker suffix?
w-	question formative?

Notes on bound morphemes

Negative constructions in Ambakich consist of two parts: a negative morpheme *wune* 'not' (which precedes the predicate) and the verbal suffix *-akitʃ* (which may be shortened to *-kitʃ* or even to *-itʃ* or *-tʃ*).

Based on limited data, there appear to be two dependent clause markers, which may suffix to the verb at the end of a clause to signal that that clause depends on a following (main) clause. The form *-a* 'SIM' would appear to encode a simultaneous temporal relationship between the events in the two clauses, whereas the form *-e* 'SEQ' would appear to encode a sequential temporal relationship, such that the event of the (preceding) dependent clause precedes the event of the (following) main clause (this sequential temporal relationship includes—and encodes—'if … then' conditional statements as well).

The three TAM suffixes are treated here as indicating 1) imperfective aspect, 2) perfective aspect, and 3) irrealis mood, respectively. These designations are based in part upon comparison with the verbal systems of Ambakich's sister languages. However, the primary TAM functions of these suffixes are not fully understood, and they could alternatively be categorized as 1) present tense, 2) past tense, and 3) future tense, respectively. The irrealis/future form *-n* is an allomorph of the suffix *-r*: it occurs when the verb stem ends in a sonorant consonant. The source of the allomorphy in the imperfective/present forms and in the perfective/past forms is unknown.

Nominal number marking is extremely limited in Ambakich. Indeed, there are only two attested plural noun forms: /kom-i/ 'boys [PL]' and /amb-ɨr/ 'men [PL]'. The non-plural form of 'boy' is /komo/. Whereas the non-plural form of 'man' is /kamboi/, I believe that the plural form /ab-ɨr/ derives (somewhat suppletively) from the word /aba/ 'papa' (it is common among the cultures of the region to refer to all adult men with paternal kinship terms). Thus, in both plurals, the final vowel of the non-plural nominal stem is lost. The plural marker *-i* also appears (seemingly as an infix) in the deictic words /ŋg-i-n/ 'these [PL.PROX]' and /and-

i-n/ ‘those [PL.DIST]’. I use the terms NON-PLURAL and PLURAL (as opposed to SINGULAR and PLURAL) because—based on limited data—it appears that the contrast in semantics here is one of ‘many’ (for plural) vs. ‘not many’ (for non-plural); thus, one or two referents (but potentially somewhat more) are typically encoded as non-plural, whereas more than that are typically encoded as plural.

Appendix 2: Ap Ma word list (Yamen village)

The following is a list of 602 lexical items in the Ap Ma language, as spoken in Yamen village. It is strongly disfavored (if not prohibited) for monosyllabic vowel-final words to occur unaffixed at the end of prosodic units. Likely because of this, many nouns provided by speakers as citation forms are given with suffixes, most commonly the focus marker (?) *-ndɨma* (hence several phonetic forms presented in brackets following the English glosses contain such suffixes). The same caveats about word class given in Appendix 1 apply here as well.

Ap Ma nouns

a	‘bunch (of betel nut)’ [andɨma]
a	‘outside’ [andɨma] (also *aŋgien*)
ai	‘lime (calcium hydroxide) (TP *kambang*)’ (areal loan)
ala	‘granddaughter’
alɨm	‘sun, day(time)’
alɨm naŋge	‘banana sp.’ (literally ‘sun banana’)
alɨm sokɨple	‘insect sp. (grasshopper sp.)’
alɨmba	‘bird sp. (hornbill bird) (TP *kokomo*)’
alo	‘string’
ambe	‘younger brother’
amboŋg	‘knee’ [amboŋ]
amo	‘bone’
an	‘firewood, stick’
aŋg	‘sago jelly’ [aŋ]
aŋgien	‘outside’ (also *andɨma*)
aŋgoŋg	‘younger sister’ [aŋgoŋ]
aŋgop	‘feather’
ape	‘father’
au	‘betel nut (*Areca catechu*) fruit (TP *buai*)’
au naŋge	‘banana sp.’ (literally ‘betel nut banana’)
awon	‘bird’
ele	‘dream’
elele	‘bird sp. (parrot) (TP *kalangal*)’
embat	‘mushroom sp.’
emboŋg	‘sago pith’ [emboŋ]
end	‘river, creek’

endo ‘taro’
endo ‘vein’
enduŋg ‘sago stick (used to stir sago jelly)’ [enduŋ]
eŋgon ‘scar’
epaŋg ‘sago flour, sago pancake’ [epaŋ] (also *japaŋg*)
esi ‘sneeze’
ewa ‘grassland’
ewoŋg ‘liver’ [ewoŋ]
ja ‘girl’ [jandɨma] (also *neŋ mbe*)
ja ‘nest’ [jandɨma]
ja ‘story’ [jandɨma]
jaan ‘earth, soil’
jake ‘rat sp. (large)’
jalum ‘grandson’
jamboŋg ‘shoulder, upper arm’ [jamboŋ]
japaŋg ‘sago flour, sago pancake’ [japaŋ] (also *epaŋg*)
japuŋg ‘spoon’ [japuŋ]
jawi ‘brains’
je ‘machete, large knife’
ji ‘bunch (of coconuts)’ [jindɨma]
ji ‘swamp’ [jindɨma]
jika ‘riverbank’
jili ‘ant sp. (red ant) (TP *karakum*)’
jilom ‘coconut husk fiber’
jimb ‘*limbum* sp. (stem of the areca palm) (TP *buai limbum*)’
jimbɨk ‘table, platform’
jimbomb ‘insect sp. (wasp)’
jimbon ‘mountain’
jiwop ‘vegetable sp. (TP *aibika*)’
jomb ‘mother’s brother (maternal uncle) (TP *kandere*)’
ju ‘hole’
ju ‘name’ [jundɨma]
jukot ‘frog sp. (lives in grass)’
julumb ‘*kundu* drum (a small hand drum)’
ka ‘sap of a tree’ [kandɨma]
kaluet ‘crayfish’
kalumb ‘cheek’
kamak ‘stand (use to hold a pot over the fire)’
kambok ‘tadpole’
kamboŋg ‘ant sp. (termite, white ant)’ [kamboŋ]
kandʒe ‘hip’
kapaŋg ‘branch’ [kapaŋ]
kapen ‘bean’
kat ‘axe (metal)’
klam ‘snake’
kle ‘frog’
klɨpat ‘frog sp. (small)’
klo ‘boil, blister’

klup	‘broom’
ko	‘digit (finger or toe); scoop (of sago)’ [kondɨma]
kokol	‘chicken’ (probably an areal loan, possibly onomatopoetic)
kole	‘husk (of betel nut), shell (of an egg), scale (of a fish)’
kolɨm	‘crossbeam’
kolop	‘lungs’
kom	‘roof’
komb	‘lips’
kombe	‘ear’
kombe	‘frog sp. (lives in water)’
konim	‘spirit sp.’ [koŋim] (possibly loan from Waran <koñim> ‘spirit of nature’; cf. fn. 4)
konim moi	‘yam sp. (wild yam)’ [koŋim moi] (literally ‘spirit yam’)
konim toŋgom	‘spirit mask’ [koŋim toŋgom] (literally ‘spirit head’)
koŋgle	‘ladle’
kotom	‘neck’
ku	‘fence; container’
kuka	‘fern sp.’
kuŋg	‘fire tongs’ [kuŋ]
la	‘cloud, sky’ [landɨma]
la	‘ginger sp. (TP *kawawar*)’
laaŋg	‘rattan cane (TP *kanda*); rope’ [laaŋ]
lak	‘bird sp. (duck)’
lakat	‘game, play’
lalamb	‘snake sp.’
lam	‘meat, flesh’
lam	‘pandanus’
laman	‘fish’
lambe	‘sago sp.’
lan	‘lizard’
landʒandʒ	‘maggot’
landʒin	‘fish sp. (perch) (TP *nilpis*)’ [landʒiŋ]
lano	‘tree sp. (ironwood tree) (TP *kwila*)’
lapaŋg	‘arm, hand’ [lapaŋ]
lapaŋg pa	‘hand’
lapaŋg pandal	‘back of the hand’
lapaŋg pon	‘wrist’ (literally ‘arm joint’)
latom	‘gums, palate’
le	‘rain’ [lendɨma] (also *mbole*)
lelat	‘fuzz (as found on some plants)’
lembwaŋg	‘cloud (black)’ [lembwaŋ]
lendom	‘coconut bark fibers; sago strainer’
li	‘day (countable)’
lɨ	‘mosquito net’ [lɨndɨma]
lɨnd	‘fin’
lo	‘penis’
lo ko	‘finger’ [lokolile ~ lokondɨma]
lo ko ɲam	‘thumb’ (literally ‘mother finger’)
loa	‘friend’

lol	‘person’
lol molɨmbi	‘statuette’ (literally ‘person spirit sp.’)
lomb	‘nape of the neck’
lomoŋg	‘bird sp. (large wildfowl)’ [lomoŋ]
lomot	‘back (of the body)’
lot	‘elbow, forearm’
lu	‘dog’
lul	‘tear, teardrop’
lumut	‘fish sp.’
lupuŋg	‘pick-axe (for hacking at sago palms)’ [lupuŋ]
lupuŋg mbon	‘pick-axe striking end’ (literally ‘fruit of the pick-axe’)
lus	‘milk’
ma	‘older sister’
ma	‘sago sp.’ [mandɨma]
maal	‘loincloth, man’s grass skirt (TP *malo*)’ (loan from Tok Pisin)
mala	‘pond’
malak	‘top’
malo	‘side’
mambe	‘bottom’
mambo	‘moon’
maŋgal	‘bird sp. (eagle, hawk) (TP *tarangau*)’
mapan	‘stinging nettle sp. (TP *salat*)’
mapiat	‘odor’
maso	‘chin’
mau	‘wet season’
mba	‘bedbug’ [mbalile]
mba	‘cassowary’ [mbandɨma]
mba	‘spirit house, men’s house (TP *haus tambaran*)’
mbaan	‘fern sp.’
mbaan	‘roof beam’
mbaaŋg	‘dish’ [mbaaŋ]
mbal	‘poison’
mbalamb	‘wind’
mbale	‘coconut shell; bowl; back of the skull’
mbalem	‘insect sp. (dragonfly)’
mbalpai	‘magic’
mbalundo	‘rat sp. (lives in water)’
mbaŋgle	‘crab’
mbe	‘child (anyone’s)’
mbe	‘down, downstream’
mbe	‘possum (TP *kapul*)’ [mbendɨma]
mbe toŋgom	‘umbilical cord’ (literally ‘head of the child’)
mbelam	‘mucus’
mbelo	‘fat, grease’
mbelo	‘vine’
mbeŋg	‘scab’ [mbeŋ]
mbeŋg	‘*limbum* palm sp.’ [mbeŋ]
mbeŋgo	‘fruit, seed, nut’ (also *mbon*)

mbepat ‘dead or dry palm’
mbetlok ‘snail’
mbeu ‘ribs’
mbikes ‘banana sp.’
mbinipat ‘cuscus (TP *black kapul*)’ [mbiŋipat]
mbɨ pa ‘bird sp. (crowned pigeon) (TP *guria*)’ [mbɨpandɨma]
mbɨn ‘land, ground’
mbɨndan ‘night’
mbɨndʒ ‘thigh, upper leg’
mbɨno ‘kidney’
mbɨŋgi ‘vegetable sp. (*Gnetum gnemon*) (TP *tulip*)’
mblai ‘egg yolk’
mble ‘fog’ [mblendɨma]
mbles ‘betel pepper leaf (TP *lip daka*)’
mblɨl ‘gallbladder’
mblɨl mɨ ‘bile’ [mblɨl mɨlile ~ mblɨl mɨndɨma] (literally ‘gallbladder water’)
mblol ‘breath’
mblumb ‘throat’
mbo ‘gray hair’
mbo ‘heart’
mbo ‘village’ [mbondɨma]
mbole ‘rain’ (also *le*)
mbolmon ‘fish sp.’
mbombia ‘vegetable sp. (amaranth) (TP *aupa*)’
mbomoŋg ‘fish sp.’ [mbomoŋ]
mbon ‘fruit, seed, nut (?)’ (as found in ‘iris’ and ‘pick-axe striking end’) (also *mbeŋgo*)
mbotin ‘language’ [mbotiŋ] (< *mbo* ‘village + *tin* ‘mouth’)
mbu ‘flatus, fart’ [mbundɨma]
mbu ‘*garamut* drum (a large slit drum); ironwood tree’ [mbundɨma]
mbu ‘louse’ [mbundɨma]
mbulo ‘eye of a needle’
mbunduk ‘shadow, shade’
mbundʒomb ‘nut sp.’
mbune ‘bird sp. (dove, pigeon) (TP *balus*)’
mbuŋg ‘ginger sp. (tall ginger) (TP *gorgor*)’ [mbuŋ]
mbuŋge ‘young coconut, drinking coconut (TP *kulau*)’
mbuop ‘belly’
mbwe ‘flying fox, large bat’
mbwi ‘egg’
me ‘waistcloth’ [mendɨma]
memb ‘betel pepper vine (TP *rop daka*)’
mend ‘fly sp. (housefly)’
mi ‘snake sp. (python) (TP *moran*)’
min ‘inside’ [miŋ]
mɨ ‘water; year’ [mɨndɨma ~ mɨlile]
mɨlin ‘muscle’ [mɨliŋ]
mɨlɨk ‘grub, sago grub’
mɨm ‘bird sp. (owl)’

mo	‘ball’ (also *pamo*)
mo	‘packet (of jellied sago, wrapped in a leaf)’ [mondɨma]
moi	‘yam’
moki	‘fish sp.’
mol	‘wild betel pepper (TP *wel daka*)’
molɨmbi	‘spirit sp.’ (possibly loan from Waran <mʉrɔm> ‘spirit of ancestors’; cf. fn. 6)
mom	‘old woman, grandmother’
momb	‘forehead, face’
momet	‘sago sp.’
mondɨm	‘earthquake’
mop	‘tree’
mopa	‘headdress’
mopluple	‘spirit sp.’
mu	‘canoe’ [mundɨma]
mua	‘banana sp.’
muŋgumuŋg	‘mushroom sp.’ [muŋgumuŋ]
muon	‘hoe, digging tool’
mwia	‘trap for catching land animals’
na	‘spear’ [nandɨma]
na	‘urine’ [nalile]
nai	‘parent’s sister (aunt)’
nala	‘question’
nando	‘skirt, woman’s grass skirt (TP *purpur*)’
naŋg	‘buttress root’ [naŋ]
naŋgat	‘pan; money’
naŋge	‘banana (plant or fruit)’
naplɨk	‘betel nut stage (somewhat mature)’
napuŋg	‘paddle’ [napuŋ]
nda	‘snake sp.’ [ndandɨma]
nda	‘path, road’ [ndak] (with mostly fossilized locative marker /-k/)
ndamb	‘pus’
nde	‘wallaby (TP *sikau*)’ [ndendɨma]
ndelo	‘mosquito-swatter’
nden	‘tree sp. (*Dracontomelon dao*) (TP *mon*)’
ndɨ	‘jungle, woods, forest’ [ndɨndɨma]
ndɨla	‘ti plant (*Cordyline fruticosa*) (TP *tanget*)’
ndɨmaŋg	‘fish sp. (catfish) (TP *mausgras pis*)’ [ndɨmaŋ]
ndɨwon	‘stone axe’ (also *tamon ŋgai*)
ndlikakle	‘insect sp. (millipede)’
ndolɨlet	‘worm’
ndonmble	‘taro sp. (wild)’
ndu	‘hunger’ [ndundɨma]
ndukund	‘tattoo’
ndumbot	‘grub sp. (lives in dry sago)’ (cf. *ŋgonmbot* ‘grub sp.’)
ndutumɨnd	‘sugar glider’
ndʒa	‘strap of a bag’ [ndʒandɨma]
ndʒap	‘breast’
ndʒap	‘fan’

ndʒap paam	‘nipple’ (literally ‘nose of the breast’)
ndʒi	‘thing [SG]’ (singular equivalent of *si*)
ndʒila	‘flower’
ndʒo	‘enemy’ [ndʒondɨma]
ndʒo	‘vulva’
ndʒo naŋge	‘banana sp.’
ndʒok	‘pulp (of a tree)’
ndʒomok	‘spine of a frond’
ndʒuop	‘banana leaf’
neŋg	‘woman’ [neŋ]
neŋg mbe	‘girl’ (also *jandɨma*) (literally ‘woman child’)
nɨ	‘talk, speech’ [nɨndɨma]
nɨmban	‘thunder’
nɨmon	‘Malay apple (*Syzygium malaccense*) (TP *laulau*)’
nomb	‘pot for stirring sago’
nu	‘feces, excrement’ [ɲu]
numbuni	‘rear, behind’ [ɲumbuɲi]
nuŋgo	‘sugarcane, sugar’ [ɲuŋgo]
nup	‘sago shoot; tail feather’ [ɲup]
ɲa	‘sword grass (TP *kunai*)’ [ɲandɨma]
ɲam	‘mother’
ɲambe	‘intestines, guts’
ɲamŋgon	‘insect sp. (caterpillar)’
ɲapet	‘glowing fungus’
ɲapet	‘horn (of a cassowary)’
ɲo	‘bird sp. (bird of paradise) (TP *kumul*)’
ɲo	‘tongue’
ɲokok	‘bird sp. (small wildfowl)’
ŋga	‘affine, in-law’
ŋgai	‘adze (tool for carving canoes)’
ŋgaŋg	‘stone, rock’ [ŋgaŋ]
ŋgapo	‘tail’
ŋgawok	‘pick-axe handle’
ŋgin	‘eel sp. (large)’ [ŋgiɲ]
ŋgɨ	‘star; firefly’ [ŋgɨndɨma]
ŋgɨmɨŋg	‘mushroom sp.’ [ŋgɨmɨŋ]
ŋglɨm	‘dew’
ŋglu	‘betel pepper (TP *daka*)’
ŋglu	‘palm flower’
ŋgole	‘thorn’
ŋgole waŋg	‘sago sp.’ [ŋgole waŋ]
ŋgolo	‘man’s sister’s child (reciprocal relation of *jomb*)’
ŋgonin	‘ant sp. (small)’ [ŋgoɲiɲ]
ŋgonmbot	‘grub sp. (lives in trees)’ (cf. *ndumbot* ‘grub sp.’)
ŋgoŋge	‘earring’
ŋgot	‘sago sp.’
ŋgu	‘arrow’ [ŋgundɨma]
ŋgu	‘mosquito’ [ŋgundɨma]

ŋgui	‘eel sp. (small)’
ŋgunmbi	‘banana sp.’
ŋgunom	‘groin’
pa	‘extremity (i.e., hand or foot) (?); hand of bananas’ [pandɨma]
pa	‘house’ [pandɨma]
pa	‘wing’
paam	‘nose, front’ (also *puŋg*)
paat	‘skin’ (also *pwat*)
paike	‘rat sp. (small)’
pakan	‘new house’
pamo	‘ball’ (literally ‘hand/foot ball’) (also *mo*)
paŋg	‘limb (?)’ [paŋ] (as found in ‘arm’ and ‘leg’)
pasok	‘armpit’
pembla	‘spider’
pemndum	‘butterfly’
pen	‘leaf’
peu	‘arrowhead’
pial	‘shelf (placed above a fire)’
pɨ	‘fire’ [pɨndɨma]
po	‘joint; segment (of sugarcane)’ [pondɨma]
poli	‘tree sp. (okari nut tree) (TP *talis*)’
pomb	‘breadfruit’
pondʒat	‘post of a house’
poŋgɨla	‘veranda’
posol	‘gecko’
poten	‘ringworm, tinea’
potom	‘chewed-up betel nut’
pue	‘ditch’
puen	‘tree sp. (large hardwood tree) (TP *ton*)’
pule	‘banana flower’
puli	‘fishing spear’
pulumb	‘belch, burp; snore’
puŋg	‘nose’ [puŋ] (also *paam*)
puŋgo	‘needle’
puŋgun	‘meat (of betel nut)’
puon	‘bandicoot’
puot	‘hiccup’
putuwoŋg	‘ashes (black)’ [putuwoŋ]
pwai	‘smoke, cloud (white)’
pwat	‘skin’ (also *paat*)
sa	‘machete handle’ [sandɨma]
sa	‘string bag, net bag (TP *bilum*)’
saand	‘tree sp. (fig tree) (TP *fikus*)’
saap	‘root’
saat	‘dry season’
sak	‘garden’
sakat	‘heel of the foot’
saklup	‘coconut flower sheath (TP *pandol*)’

samak ‘ladder, steps’
sambɨlamb ‘cyclone’
samble ‘scorpion’
sand ‘coconut husk’
sap ‘vegetables, greens’
se ‘nail, fingernail; claw; tusk’
se ‘vegetable sp. (*Erythrina variegata*) (TP *balbal*)’
semnoŋg ‘yam sp. (purple)’ [semnoŋ]
si ‘blood’ [silile]
si ‘bump on the skin, mosquito bite’
si ‘things [PL]’ (plural equivalent of *ndʒi*)
silam ‘mix of betel nut, betel pepper, and lime (TP *red buai*)’
sim ‘salt; soup’
sɨ ko ‘toe’ [sɨkondɨma]
sɨmal ‘shin, lower leg’
sɨmo ‘lemon, lime (TP *muli*)’
sɨnɨmi ‘bladder’
sɨpaŋg ‘leg’ [sɨpaŋ]
sɨpaŋg pa ‘foot’
sɨpaŋg po ‘ankle’ (literally ‘leg joint’)
so ‘bridge’ [sondɨma]
so ‘piece (of yam)’
soasa ‘basket (made from coconut fronds)’
soke ‘tobacco’ (areal loan)
somat ‘coconut frond’
somb ‘coconut’
soŋgol ‘buttocks’
su ‘pig’
su mend ‘fly sp. (blowfly)’ (literally ‘pig fly’)
sulol ‘trash’
sumbuop ‘mushroom sp.’
ta ‘up, upstream’ [tandɨma]
taala ‘clay’
tai ‘father’s brother (paternal uncle)’
takat ‘bald spot’
tambo ‘bamboo; flute’
tamboŋg ‘chest’ [tamboŋ]
tamon ŋgai ‘stone axe’ (also *ndɨwon*)
tandaŋg ‘banana sp.’ [tandaŋ]
taŋgo ‘shelf (placed above a fire, higher than the *pial*)’
tat ‘older brother’
tiak ‘rat sp. (lives in the jungle)’
te ‘cough, phlegm’ [tendɨma]
tin ‘mouth; beak’ [tiɲ]
tɨpaŋg ‘ant sp. (black ant)’ [tɨpaŋ]
tɨwol ‘comb (of a rooster)’
to ‘scrotum’
to mbeŋgo ‘testicle’ (literally ‘fruit of the scrotum’)

tond	‘navel’
toŋgom	‘head’
tunduŋg	‘arrow shaft’ [tunduŋ]
tuŋgo	‘leech’
tupol	‘banana sp.’
twil	‘ant sp. (large)’
wa	‘fish trap’ [wandɨma]
wa	‘tooth’
waam	‘eye’
waam ku	‘eye mucus’ (literally ‘eye fence’?)
waam mbon	‘iris or pupil of the eye’ (literally ‘fruit of the eye’)
waan	‘spirit sp.’
waan	‘tree sp. (*Octomeles sumatrana*) (TP *erima*)’
waap	‘morning’
waau	‘afternoon’
wai	‘shield’
waka	‘beam’
wakan	‘tree sp. (*Calophyllum* spp.) (TP *kalopilum*)’
walamb	‘dust’
wale	‘hair’
waŋg	‘sago palm’ [waŋ]
wau	‘old man, grandfather’
we	‘band, ring, armband, joint for pick-axe’
we	‘bow’ [wendɨma] (also *welo*)
we	‘mound (as for planting yams)’ [wendɨma]
we	‘turtle’
welamb	‘saliva, spit’
welo	‘bow’ (also *we*)
wesmat	‘spirit sp. (ghost)’
wis	‘perspiration, sweat’
wit	‘insect sp. (bee)’
wo	‘crocodile’ [wondɨma]
woka	‘hearth, stove; ashes (white)’
wolɨk	‘sago sp.’
woloŋg	‘thatch (TP *morota*)’ [woloŋ]
woltap	‘vomitus’
wom	‘conch shell’
wombe	‘woven fronds (TP *pangal*)’
wombi	‘grass’
womu	‘insect sp. (grasshopper)’
wond	‘middle’
wondʒin	‘yam sp. (TP *mami*)’ [wondʒiŋ]
woplok	‘mud’
wu	‘bag; womb’ [wundɨma]
wua	‘cane grass (TP *pitpit*)’
wukumb	‘seedling, shoot (of coconut, betel nut, yam)’
wulɨmb	‘reeds (TP *tiktik*)’
wulo	‘wound, sore’

wuluk	‘man’
wuluk mbe	‘boy’ (literally ‘man child’)
wumboŋg	‘fish sp. (TP *bikmaus*)’ [wumboŋ]
wumɨn	‘basket’
wund	‘body’
wusɨlamb	‘fern sp.’

Ap Ma verbs

an-	‘give’
at-	‘hit, kill’ (also *e-*)
e-	‘hit, kill’ (also *at-*)
ep-	‘stay, be, be at (be located at)’
ji-	‘down, fell (a tree)’
jika-	‘put down’
k-	‘prepare (sago)’
ka-	‘put, leave (behind)’
m-	‘eat’
mɨ-	‘go’
mis	‘go’ (irregular perfective form of *mɨ-*)
pu-	‘fall (of rain)’
si-	‘come’
t-	‘walk’
tɨn- ~ t	‘take, get’
wa-	‘sleep’
wis	‘come’ (irregular/suppletive perfective form of *si-*)

Ap Ma adjectives

ap	‘empty’
epat	‘soft’
epo	‘bitter’
jaulo	‘good’
jom	‘white’
kakan	‘new, young’
keu	‘sharp’
kopon	‘full’
kupo	‘cold’
lɨmen	‘sweet’
luwot	‘ripe’
mbaaŋg	‘far’ [mbaaŋ]
mbapan	‘dry’
mblɨndɨn	‘green, yellow’
mbuŋgo	‘small’
nambo	‘huge’
ndɨnat	‘heavy’
ndʒaiŋga	‘left (not right)’
ndʒuke	‘bad’ (also *ndʒuwe*)
ndʒuwe	‘bad’ (also *ndʒuke*)

nok	‘hard’
ɲaam	‘big’
palet	‘light (not heavy)’
pepma	‘thin’
pɨnd	‘black’
plindʒ	‘straight, correct’
plom	‘hot’
pondʒ	‘old’
pote	‘dull’
puŋga	‘right (not left)’
sapan	‘wet, rotten’
somblon	‘thick’
sose	‘red’
titak	‘near, close’
wumbo	‘round’

Ap Ma pronouns

ni-	‘I [1SG]’ [ɲi-]
u-	‘you [2SG]’ (also [wu-])
mɨ- ~ ma-	‘he, she, it [3SG]’
nɨ-	‘we [1PL.EXCL]’
won-	‘we [1PL.INCL]’
nu-	‘you [2PL]’ (also [ɲu-])
lɨ-	‘they [3PL]’
man	‘his, her, its [3SG.POSS]’
awa	‘-self [INTS]’ (intensive pronoun; e.g., ‘He *himself* did it.’)
nau	‘-self [REFL]’ (reflexive pronoun, e.g., ‘He saw himself.’)
ndama	‘that [is the] one who [SG.FOC]’ (singular focus marker)
lale	‘those [are the] ones who [PL.FOC]’ (plural focus marker)

Ap Ma deictics

ŋgɨ	‘this [SG.PROX]’ (proclitic?)
mɨ	‘that [SG.MED]’ (proclitic?) (= [3SG])
ndɨ	‘that [SG.DIST]’ (proclitic?)
wɨ	‘these [PL.PROX]’ (proclitic?)
lɨ	‘those [PL.DIST]’ (proclitic?) (= [3PL])
ŋga	‘this [SG.PROX]’ (enclitic?)
ma	‘that [SG.MED]’ (enclitic?)
nda	‘that [SG.DIST]’ (enclitic?)
wa	‘these [PL.PROX]’ (enclitic?)
la	‘those [PL.DIST]’ (enclitic?)
ŋgak	‘here’
ndak	‘there’

Ap Ma numerals

wa	‘one; a, an’ (indefinite marker?)
mba	‘one’ (also *mboa*)
mboa	‘one’ (< *mba-wa* ‘a/one one’?) (also *mba*)
niŋgon	‘two’ [ɲiŋgon] (also *nuŋgon*)
nuŋgon	‘two’ [ɲuŋgon] (also *nuŋgon*)
sala	‘three’ (also means ‘some’)
leo	‘four’
mbɨwa	‘five’ (< *mbɨ-wa* ‘a/one five’?)
mbɨwa awan mba	‘six’ (‘five plus one’)
mbɨwa awan niŋgon	‘seven’ (‘five plus two’)
mbɨwa awan sala	‘eight’ (‘five plus three’)
mbɨwa awan leo	‘nine’ (‘five plus four’)
mbɨwa awan mbɨwa	‘ten’ (‘five plus five’) (also *mbɨniŋgon*)
mbɨniŋgon	‘ten’ [mbɨŋniŋgon] (< *mbɨ-niŋgon* ‘two fives’) (also *mbɨwa awan mbɨwa*)
ŋgo (mba)	‘ten’ (used for counting money)
ŋgo niŋgon	‘twenty’ (‘two tens’) (used for counting money)
ŋgut (mba)	‘fifty’ (used for counting money)
ŋgut niŋgon	‘hundred’ (‘two fifties’) (used for counting money)

Ap Ma quantifiers

and	‘many’
nimle	‘some’ (*sala* ‘three’ is also translated by consultants as ‘some’)
lɨsa(-le)	‘all’ (also *lupu(-le)*)
lupu(-le)	‘all’ (also *lɨsa(-le)*)
pou	‘whole, entire’
ap(-le)	‘none’
embo	‘enough’
awan	‘plus’ (used in forming higher numerals; e.g., *mbɨwa awan niŋgon* ‘seven’)

Ap Ma adverbs

mien(-tap)	‘yes’ (affirmative response word)
aien(-tap)	‘no’ (negative response word) (also *ap ma*)
ap ma	‘no’ (negative response word) (also *aien(-tap)*)
mina…(k)al	‘not [NEG]’ [miɲa…(k)al] (discontinuous negator)
pindan	‘before’
numbuni	‘afterwards, later’ [ɲumbuɲi]
mina	‘now, today’ [miɲa]
nindan	‘yesterday’ [ɲindan]
mbundan	‘tomorrow’
luwendan	‘day before yesterday’
wulendan	‘day after tomorrow’
ja	‘just, only’
kak	‘still’ (continuous)
kam	‘yet’ (negative polarity equivalent of *kak*)
ji	‘down, downward’

Ap Ma interrogatives

loma	‘who?’ (< *lol* ‘person’)
ndʒuma	‘what?’ (< *ndʒi* ‘thing’)
ŋgoma	‘where?’
ŋgonma	‘why?’
woma	‘when?’

Ap Ma postpositions

al	‘on, at, atop’
o	‘from, at’
jek	‘for, for the sake of’ (benefactive)
nɨn	‘with’ [COM]’ (comitative, i.e., ‘together with’)

Ap Ma bound morphemes

-l ~ -e	imperfective suffix
-p ~ -ap	perfective suffix
-la ~ a	irrealis suffix
e-	perfect prefix
-n	oblique marker
-k	locative marker
-tap	intensive marker
-ma	question formative
-mba	(pro)nominal suffix (epistemic?)
-jen	pronominal suffix (topic marker?)
-ndɨma	nominal suffix (singular focus marker?)
-lile	nominal suffix (plural focus marker?)