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Is Oksapmin Ok? - A study of the genetic relationship between Oksapmin and the Ok languages

In this paper evidence is provided that suggests the Oksapmin language, previously classed as constituting an isolate within the larger Trans New Guinea family, is related to the Mountain Ok branch of the Ok language family and, by extension, the entire Ok family. A list of cognates and sound correspondences is given, as well as evidence from bound morphology and pronoun paradigms.

Keywords: Historical linguistics, Papuan linguistics, Ok languages, Mian, Oksapmin

1. Introduction

Evidence is provided in this article from the better researched Mountain Ok languages to date, Mian, Tifal and Telefol, as well as from Oksapmin to show that these descend from a common proto language, referred to here as proto Ok-Oksapmin. While a comprehensive reconstruction of proto Ok-Oksapmin is not attempted here, relations within the Ok-Oksapmin group are tentatively posited, as shown in Figure 1 below, based on Healey (1964), Voorhoeve (2005), and evidence from the authors' original research on Mian and Oksapmin.

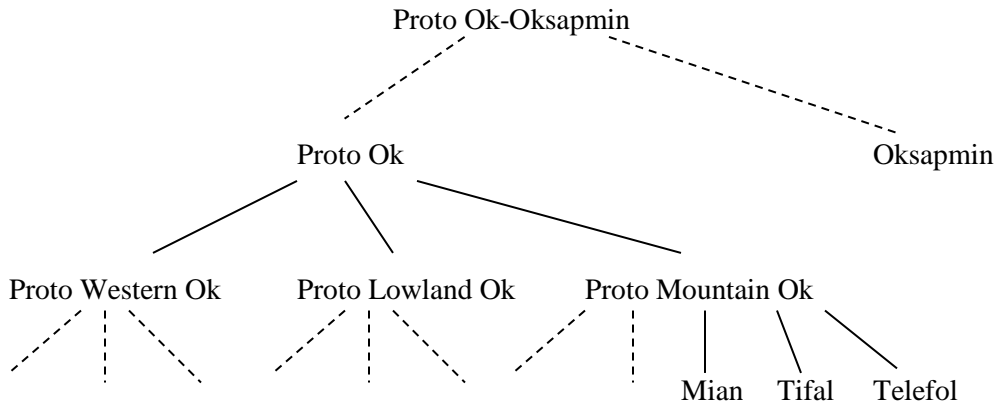
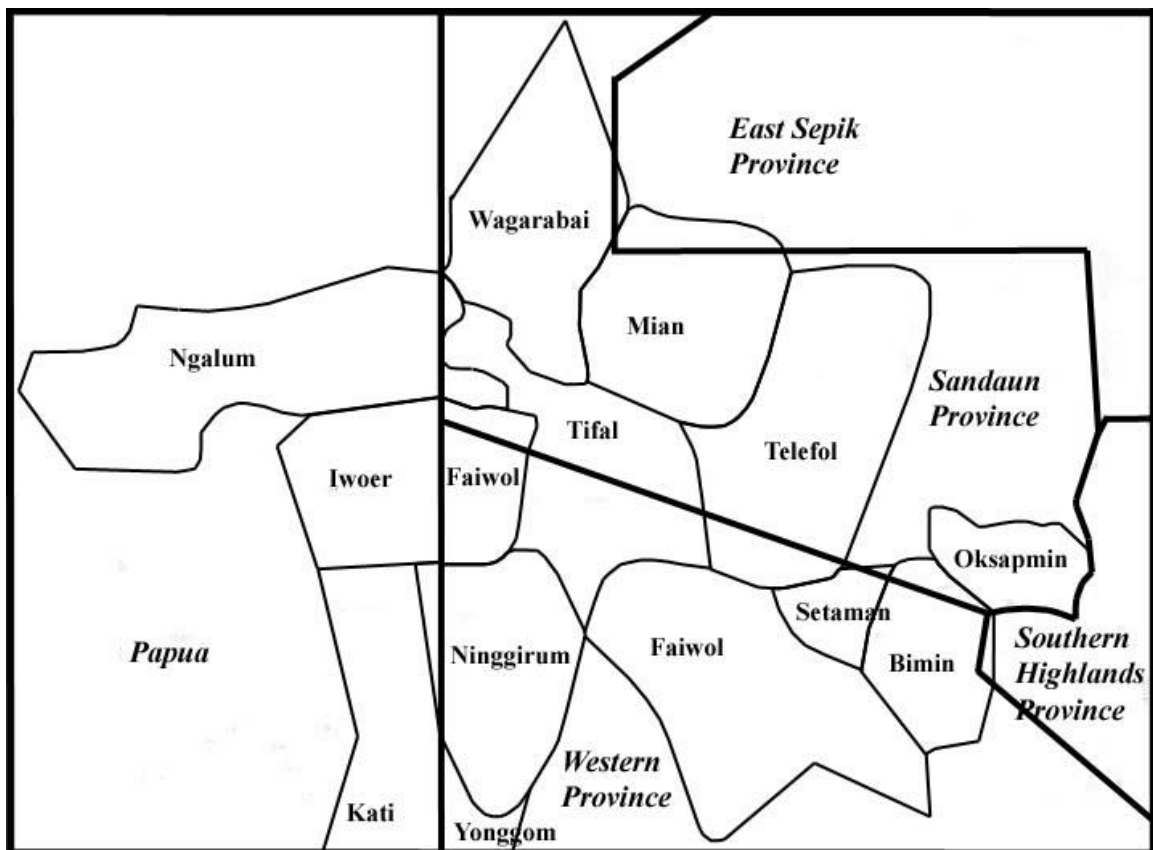


Figure 1 Relations within the Ok-Oksapmin group¹

The approximate locations of Oksapmin along with the more well known languages of the Ok family are given in Figure 2 below.



¹ Note that further research is required to conclusively demonstrate that the Ok languages are more closely related to each other than they are to Oksapmin, as it is theoretically possible, although prima facie unlikely, that Oksapmin forms a subgroup with one or more branches of Ok.

Figure 2 Approximate locations of the Ok-Okspamin group languages
Based on SIL maps (Gordon 2005)

The widely accepted classification of Oksapmin up to this point has been that it is an isolate within the Trans-New Guinea Phylum (TNGP). This classification is based on Healey's thesis (1964) in which he argues that the well reported lexical similarities between Oksapmin and the Ok languages are probably due to borrowing:

“Oksapmin shows 17% possible cognates with Bimin, an average of 7% with the other languages of the Mountain-Ok Sub-Family, and an average of only 3% with languages of the Lowland-Ok Sub-Family. These figures show exactly the characteristics to be expected if it is posited that Oksapmin is genetically unrelated to the Ok Family and that within the past millenium [*sic* – RL & SF] or so it has borrowed heavily from Bimin” (Healey 1964: 115).

Wurm (1982) does not challenge Healey's classification and tentatively classes Oksapmin as an isolate within the TNGP:

“The classificatory position of Oksapmin remains doubtful and it may well be classifiable as a phylum-level isolate which has been subject to very strong influences by Trans-New Guinea Phylum languages, especially languages of the Ok Family, with this influence apparently so recent that it may still be recognisable as a foreign element, at least on the lexical level. At the same time, it is not possible to say whether or not the relative structural and typological similarity of Oksapmin to the usual Trans-New Guinea Phylum patterns may also be attributable to such an influence, or may be the result of a possible relationship of Oksapmin to the languages of the phylum, or may have been brought about by chance” (Wurm 1982: 74-5).

In his dictionary of Oksapmin Lawrence (1993) agrees with Healey's (1964) classification. Lawrence points out that the name Oksapmin “is misleading as it suggest[s] that the Oksapmin language is part of the Ok family of languages, which it is not. It is considered a language isolate” (Lawrence 1993: 206).

Throughout this paper, the data used is primarily from Mian and Oksapmin (from the authors' field notes and also from Lawrence (1993)) and from Tifal (Healey and Steinkraus 1972) and Telefol (Healey 1964, Healey and Healey 1977). There are only limited materials available on the other Ok languages.

1.1. The Ok language family

According to Healey (1964) the Ok family consists of two branches, Mountain Ok (Telefol, Mian, Tifal, Faiwol, and Bimin) and Lowland Ok (Ngalum, Kati, Iwoer/Iwur, Yomggom). Further research suggests that there might also be a Western Ok branch, whose languages are all spoken in West Papua (Mark Donohue, p.c.). At this stage of the research, we concentrate on Mountain Ok because there is hardly any data available on the morphology of the Lowland or the Western Ok languages. Healey showed that the Ok languages descended from a single proto language and that Oksapmin is not a member of the Ok family. Likewise, Oksapmin is not analysed as a member of the Ok family here, but a single proto language is posited, namely proto Ok-Oksapmin, from which Oksapmin and the Ok languages developed. While it is theoretically possible that Oksapmin forms a subgroup with one or more branches of the Ok language family, it is *prima facie* more likely, given Healey's evidence showing the Ok languages as a clear genetic grouping to the exclusion of Oksapmin, that Oksapmin is less closely related to the Ok languages than they are to each other. See Healey (1964) for more distinctive features of the Ok languages family as a whole. Conclusive evidence of innovations in morphological paradigms shared by all the branches of Ok but not Oksapmin is a point for further research.

2. Identifying relatedness in New Guinea

On the island of New Guinea there has been multilingualism, language mixing and borrowing on a large scale for tens of thousands of years. Linguistic diversity and language mixing are key features of the New Guinea linguistic area. This diversity can find an explanation in the social situation of New Guinea where “people were bi- or multilingual and were fluent in an emblematic language (the language most closely identified with their tribal identity) and other languages (intergroup languages)” (Ross 1996: 181).

Foley (1986, 2000) notes the impact of language contact due to the type of social situation found in New Guinea. He describes convergence due to features which diffuse

from group to group (via metatypy through language contact (Ross 2001)), and divergence due to esoterogeny (Thurston 1987; 1989) in the service of group solidarity (Foley 1986: 283). This provides a model for which the result would be exactly as is found in New Guinea: a linguistic area which shares typological features, but great diversity in lexicon. This opinion is shared by Ross: “The convergence which manifests itself in a linguistic area like New Guinea is the outcome of this unilateral process [of metatypy – RL & SF] repeated over and over again with different language pairs.” (Ross 2001: 153)

Given the probable types of linguistic change which have occurred in New Guinea as described above, the question arises what is the best way to determine genetic relatedness. Early researchers, such as Wurm, used similarity of typological features and lexicostatistics to establish genetic relations between Papuan languages. Foley (1986: 263-68), however, demonstrates the inadequacy of typological features in determining genetic relatedness in Papuan languages. He identifies a number of features of phonology, morphology and syntax which are shared between Yimas (Lower Sepik), Enga (TNG) and Alamlak (Sepik Hill), three languages which are not closely related. He says that these shared features which are probably the result of diffusion and that this diffusion is a problem in determining relatedness among Papuan languages in general.

Durie and Ross argue that typological and syntactic features are not evidence of genetic relatedness. They point out that syntactic comparison “is far from meeting the individual-identifying criterion, and should never be used to establish genetic relationships.” (Ross and Durie 1996: 13)

A number of researchers argue that lexicostatistics do not provide adequate evidence for genetic relatedness. “While one can initially establish vocabulary resemblances between two or several languages as indications of where to do further research, this cannot furnish a definitive demonstration; vocabulary can only orient the research, and proof comes from elsewhere” (Meillet 1958: 97 as cited in Nichols 1996: 47).

In order to determine genetic relatedness, a number of researchers (e.g. Foley 1986, Comrie 1989, and Nichols 1996) argue for the strength of bound morphology and paradigmatic evidence over lexical items. In this heuristic, full cognate grammatical

paradigms are the cornerstone for proving relatedness. “[T]he evidence taken as probative [...] is not individual items but whole systems or subsystems with a good deal of internal paradigmaticity, ideally multiple paradigmaticity, and involving not only categories together with their (phonologically specific) markers, or lexical categories with some of their (phonologically specific) member lexemes” (Nichols 1996: 48).

The primary reason for this preference for morphological paradigms as proof of relatedness is that independent parallel developments of morphological paradigms is highly unlikely. Moreover, morphology is generally viewed as being more stable and not as prone to borrowing as individual lexemes. “In the case of individual words [...] borrowing is quite possible, and this is why Nichols argues that the evidence of individual lexical items is at best supportive [...] rather than itself diagnostic” (Ross and Durie 1996: 8).

Foley likewise suggests that the best heuristic for determining genetic relations between Papuan languages is bound verbal morphology, although even here caution must be exercised:

“Consequently, comparative linguistics in Papuan languages must proceed with care and the utmost rigor. It would appear that bound morphological forms are the most resistant to borrowing [...], so that bound morphological forms that appear cognate are the most reliable guide to genetic relationships between Papuan languages. Although not unchallenged (Pawley 1998), this working hypotheses seems the most trustworthy, albeit conservative, way to proceed” (Foley 2000: 359).

With the above in mind, cognates, regular sound correspondences, and evidence from bound morphology and paradigms are all presented in this paper.

3. Sound correspondences

In this section cognates from Mian, Tifal, Telefol, and Oksapmin are presented. As discussed above, Tifal and Telefol are used due to the availability of a vocabulary of Tifal and a good dictionary of Telefol. See the appendix 1 for a list of cognates and tentative proto Ok-Oksapmin reconstructions.

3.1. Consonants

The proposed consonant phoneme inventory for proto Ok-Oksapmin is shown in Figure 3 below. Proto Ok-Oksapmin had two stop series which contrasted voiceless and prenasalized voiced stops. Prenasalization is only preserved in Oksapmin and not in Telefol, Tifal or Mian although, in at least Mian, voiced stops are prenasalized in some environments (see Fedden 2007 for details). In Telefol, the distinction between the two stop series has disappeared completely. In Tifal the distinction is preserved only for alveolar stops. In Mian, the distinction has disappeared for bilabial and alveolar stops and a voicing distinction is maintained for the velar and labialized velar stops only. In Mian the velar fricative and voiceless velar stop have been collapsed. In Tifal and Telefol all three velar proto sounds have been collapsed into a single sound, /k/ (although some /*^ŋg/ and /*k/ are realized as /d/ and /t/ respectively, see below). The rest of the proto consonant system is basically preserved in the daughter languages. Allophones are listed in brackets. Dashes indicate that a proto phoneme cell remains unfilled in a daughter language, e.g Oksapmin has no reflex of the proto sound *ŋ.

	Bilabial	Labio-dental	Alveolar	Palatal	Velar	Labialized Velar
Stops	*p		*t		*k	*k ^w
	* ^m b		* ⁿ d		* ^ŋ g	* ^ŋ g ^w
Fricatives		*f	*s		*x	
Glides	*w			*j		
Nasals	*m		*n		*ŋ	
Lateral			*l			

Figure 3 Reconstructed proto Ok-Oksapmin consonants

	Bilabial	Alveolar	Palatal	Velar	Labialized Velar
Stops	-	t		k	k ^w
	^m b ² [^m b, m]	ⁿ d ³ [ⁿ d, n]		^ŋ g [^ŋ g, ŋ ⁴]	^ŋ g ^w
Fricatives	ϕ ⁵ [p, p ^ϕ , ϕ, β]	s		x [x, ʁ]	x ^w
Glides	w		j		
Nasals	m	n		-	
Lateral		l			

Figure 4 Oksapmin Consonants⁶

	Bilabial	Labio-dental	Alveolar	Palatal	Velar	Labialized Velar
Stops	-		t		k [k, g]	k ^w
	b [p, b]		d [d, g]		-	-
Fricatives			s		-	
Glides	w			j		
Nasals	m		n		ŋ	
Lateral			l			

Figure 5 Telefol consonants (Healey and Healey 1977: xv-xvi; Healey 1992)

	Bilabial	Labio-dental	Alveolar	Palatal	Velar	Labialized Velar
Stops	-		t		k	k ^w
	b [p, b]		d		-	-
Fricatives			s		-	
Glides	w			j		
Nasals	m		n		ŋ	
Lateral			l			

Figure 6 Tifal consonants (Healey and Steinkraus 1972: v; Boush 1994)

² /ⁿd/ is orthographically represented by <d> for the allophone [ⁿd]; <n> for the allophone [n].

³ /^mb/ is orthographically represented by for the allophone [^mb]; <m> for the allophone [m].

⁴ /^ŋg/ is orthographically represented by <g> for the allophone [^ŋg]; <ŋ> for the allophone [ŋ].

⁵ /ϕ/ is represented by <p> in the orthography.

⁶ The phoneme /x^w/ is marginal in Oksapmin (see Loughnane 2009 for details). Lawrence (1993) distinguishes a distinct /ŋ/ phoneme in the 'upper' variety of Oksapmin, which does not appear to exist in Lower Oksapmin. Some dialects of Oksapmin have an /r/ phoneme instead of /l/.

	Bilabial	Labio-dental	Alveolar	Palatal	Velar	Labialized Velar	Glottal
Stops	-		t [tʰ, tʰ]		k [kʰ, kʰ, x]	kʷ	
	b [ᵐb, b, β, pʰ, pʰ]		-		g [ᵑg, g]	gʷ [ᵑgʷ, gʷ]	
Fricatives			s		-		h
Glides	w			j			
Nasals	m		n		ŋ		
Lateral			l [l, ᵐd, d]				

Figure 7 Mian Consonants

A summary of the sound correspondences in Mian, Tifal, Telefol and Oksapmin is shown in Figure 8 below along with the reconstructed proto phoneme and conditioning environment where relevant.

Mian	:	Tifal	:	Telefol	:	Oksapmin	Proto Ok-Oksapmin	Conditioning environment (if any)
b	:	b	:	b	:	ᵐb	*ᵐb	
b	:	b	:	b	:	m	*ᵐb	_\$
b	:	b	:	b	:	ϕ	*p	
m	:	m	:	m	:	m	*m	
f	:	f	:	f	:	ϕ	*f	#_
w	:	w	:	w	:	w	*w	
l	:	d	:	d	:	ᵐd	*ᵐd	\$_
t	:	t	:	t	:	l	*ᵐd	
t	:	t	:	t	:	t	*t	
n	:	n	:	n	:	n	*n	
s	:	s	:	s	:	s	*s	
l	:	l	:	l	:	l	*l	
j	:	j	:	j	:	j	*j	
g	:	d	:	d	:	ᵑg	*ᵑg	#_
k	:	k	:	k	:	ᵑg	*ᵑg	V_V
∅	:	k	:	k	:	ᵑg	*ᵑg	_\$
gʷ	:	?	:	?	:	ᵑgʷ	*ᵑgʷ	
k	:	t	:	t	:	k	*k	_/i/
k	:	k	:	k	:	k	*k	
kʷ	:	k	:	k	:	kʷ	*kʷ	
k	:	k	:	k	:	x	*x	
ŋ	:	ŋ	:	ŋ	:	ᵑg	*ŋ	

Figure 8 Summary of proto Ok-Oksapmin consonants and their reflexes

/ᵐb/

*/*mb/* in proto Ok-Oksapmin is realized as /b/ in Mian and as /b/ in Tifal and Telefol. It is possible that /b/ in Tifal and Telefol is prenasalized, more information is needed on this point. */*mb/* corresponds with */*mb/* syllable initially and with /m/ syllable finally in Oksapmin.⁷

*/*mb/* → /m/ / _\$
 → /^mb/ / elsewhere
 Figure 9 Oksapmin reflexes of */*b/*

Mian	Tifal	Telefol	Oksapmin	No. (Examples)
b	b	b	^m b	{#, C\$}_46, 59, 80, 113, 121, 201, 202 V_V 70, 84, 87, 161, 173
b	b	b	m	_{#, \$C} 36, 210

Figure 10 */*b/* reflexes in Mian, Tifal, Telefol and Oksapmin

	Mian	Tifal	Telefol	Oksapmin	Meaning
_\$	tub	tuùb (kun)	tuub (kún)	(təm) tom	‘chest (bone)’
V_V	-	abaàl	abaál	xəbal	‘tasty’
	-a kibila	-	-	xibə-	‘tighten bow string’
\$_	bobol	-	búbúl	bopol	‘heart’
	-	bokal	bokól	boxol	‘eagle’

Figure 11 Examples demonstrating */*b/* reflexes

*/*p/*

*/*p/* in proto Ok-Oksapmin has the reflex /b/ in the Ok languages and /ϕ/⁸ in Oksapmin. Examples which show this correspondence are given in the following table.

Mian	Tifal	Telefol	Oksapmin	No. (Examples)
b	b	b	ϕ	{#, C\$}_ 16, 50, 114 V_V 80, 122, 123 _{#, \$C} 7, 35, 62, 101, 121, 130, 131, 145, 148, 151, 193, 199, 202

Figure 12 */*p/* reflexes in Mian, Tifal, Telefol and Oksapmin

⁷ In examples 89, /b/ in Tifal corresponds with zero in Mian, Telefol and Oksapmin.

⁸ /ϕ/ is realized as /ϕ/ syllable-initially, /β/ between vowels, and /p/ syllable finally in Oksapmin.

	Mian	Tifal	Telefol	Oksapmin	Meaning
\$_	bi	-	bii	pt ⁹	‘be, stay’
V_V	bobol	-	búbúl	bopol	‘heart’
_\$	ináb	ináb	ináb	inəp	‘snake’/‘snake variety’

Figure 13 Examples demonstrating /*p/ reflexes

/*m/

/*m/ is realized as /m/ in all daughter languages.

Mian	Tifal	Telefol	Oksapmin	No. (Examples)
m	m	m	m	{#, C\$}_ 52, 54, 63, 112\$, 185, 196, 205 V_V 2, 48, 79, 149, 179, 185, 189, 190, 205& _{#, \$C}15, 19, 20, 21, 24, 26, 38, 52, 74, 79^, 81, 85, 86, 96, 103, 112, 116, 122, 124, 162, 172, 186, 191, 208

Figure 14 /*m/ reflexes in Mian, Tifal, Telefol and Oksapmin
^zero in Mian
\$zero in Oksapmin
&word final in Oksapmin and Telefol

	Mian	Tifal	Telefol	Oksapmin	Meaning
\$_	mimin	mimín/mamín	mimín	mumun(-si)	‘warm’
V_V	imăn	imaan	imaán	iman	‘urine’
_\$	tem	tem	tem	tem	‘hole’

Figure 15 Examples demonstrating /*m/ reflexes

/*f/

Word initially, /*f/ is realized as /f/ in the Ok languages¹⁰ and /ϕ/ in Oksapmin.

/*f/ syllable final and intervocalic cognates are not attested.

Mian	Tifal	Telefol	Oksapmin	No. (Examples)
f	f	f	ϕ	#_ 26, 93, 120, 171^

Figure 16 /*f/ reflexes in Mian, Tifal, Telefol and Oksapmin
^/h/ in Mian

	Mian	Tifal	Telefol	Oksapmin	Meaning
#_	fũm	fím	fuúm	pim	‘blunt’

Figure 17 Examples demonstrating /*f/ reflexes

⁹ It is assumed Oksapmin has added the /t/ here, possibly through reanalysing verb morphology as part of the verb root.

¹⁰ In Mian and in several Lowland Ok languages, /*f/ is realized as /h/ in some environments as in example 171.

*/*w/*

*/*w/* cognates are not well attested in our current data. */*w/* is realized as /w/ in all daughter languages syllable-initially. Between vowels */*w/* is realized as /w/ in all languages except Telefol where it is realized as /b/. */*w/* is realized as zero in Mian and /w/ in Oksapmin syllable-finally. More cognates are needed to confirm the */*w/* correspondences.

Mian	Tifal	Telefol	Oksapmin	No. (Examples)
w	w	w	w	{#, C\$}_ 105, 110
w	w	b	w	V_V 82, 162
∅	?	?	w	_ {#, \$C} 63

Figure 18 */*w/* reflexes in Mian, Tifal, Telefol and Oksapmin
 *Show partial correspondence only as some languages have a zero reflex

	Mian	Tifal	Telefol	Oksapmin	Meaning
{C\$, #}_	-	wín	wín	win	‘name’
	(keke)wan	-	wáán	wan	‘nettle variety’
V_V	awěm	awèm	abém	əwam	‘taboo’
_ {\$C, #}	makă	-	-	məxaw	‘enemy’

Figure 19 Examples demonstrating */*w/* reflexes

*/*nd/*

Word initially and medially before a consonant, */*nd/* is realized as /l/ in Mian, as /nd/ in Oksapmin, and as /d/ in Tifal and Telefol.¹¹ In all other environments, */*nd/* is realized as /t/ in the Ok languages and as /l/ in Oksapmin.

Mian	Tifal	Telefol	Oksapmin	No. (Examples)
l	t	t	nd	{#, C\$}_ 35, (167), (172), 210
l	t	t	l	V_V 35, 50, 112^
t	t	t	l	_ {#, \$C} 48, 127, 201

Figure 20 */*d/* reflexes in Mian, Tifal, Telefol and Oksapmin
 ^ /l/ is an alternative to /t/ here in Telefol
 () could also be */*l/*

¹¹ Except for *liŋlaŋ* ‘thin’ in Mian where reduplication has taken place.

	Mian	Tifal	Telefol	Oksapmin	Meaning
#_	lleb	titíb ~ tatíb	títíb	dələp	‘cassuarina tree’
V_V	-	mitúm ~ matúm ~ múluúm ~ mutúm	mútuúm	lum	‘nose’
_#	kimit	timít	támít ~ tímít	kumul	‘cucumber’

Figure 21 Examples demonstrating /*d/ reflexes

/*t/

/*t/ is realized as /t/ in all the daughter languages.

Mian	Tifal	Telefol	Oksapmin	No. (Examples)
t	t	t	t	{#, C\$}_ 36, 38, 86, 131, 145, 151 V_V 90, 139, 151, 159, 194, 197 _#{#, \$C} 6, 94, 118, 154, 158

Figure 22 /*t/ reflexes in Mian, Tifal, Telefol and Oksapmin

	Mian	Tifal	Telefol	Oksapmin	Meaning
{C,#}\$_	tem	tem	tem	tem	‘in, hole’
V_V	(a)tan	atán	átaan	atan	‘sun’
_#{C,#}	anat	kanaàt	kanaát	xənat	‘arrow type’

Figure 23 Examples demonstrating /*t/ reflexes

/*n/

/*n/ is realized as /n/ in all the daughter languages.¹²

Mian	Tifal	Telefol	Oksapmin	No. (Examples)
n	n	n	n	{#, C\$}_ 146, 189 V_V 6, 38, 71, 148, 191, 206^ _#{#, \$C} 2, 21, 54, 68, 90, 105, 106, 110, 115, 123, 129, 135, 149, 159, 179, 183, 185, 190, 196

Figure 24 /*n/ reflexes in Mian, Tifal, Telefol and Oksapmin
^word initial in Mian, Tifal and Telefol

	Mian	Tifal	Telefol	Oksapmin	Meaning
{C,#}\$_	nama	nama	námá-	nəme	‘white cockatoo’
V_V	inəb	ináb	ináb	inəp	‘snake’, ‘snake variety’
_#{C,#}	kin	tiín	tiin	kin	‘eye’

Figure 25 Examples demonstrating /*n/ reflexes

/*s/

¹² In example 17, it is assumed that the /*n/ phoneme has been reanalysed as /ⁿd/ in Oksapmin of which [n] is an allophone. This probably occurred because Oksapmin lost the initial vowel so that the [n] was not longer syllable final.

**/s/* has the reflex */s/* in all daughter languages in all environments as shown by the examples given below.¹³

Mian	Tifal	Telefol	Oksapmin	No. (Examples)
s	s	s	s	{#, C\$}_ 12, 73, 108, 122, 126, 135, 154, 157, 169, 190 V_V 96, 113^, 114, 125, 129, 183,

Figure 26 **/s/* reflexes in Mian, Tifal, Telefol and Oksapmin
^ word final in Telefol and Oksapmin

	Mian	Tifal	Telefol	Oksapmin	Meaning
\$_	san	san	san	san	‘seedling, plant, container’
V_V	isǎ	-	isák (‘blood’)	əsəx	‘pus’

Figure 27 Examples demonstrating **/s/* reflexes

**/l/*

**/l/* has the reflex */l/* in all daughter languages in most environments as shown by the examples given below. */l/* in Mian, Tifal and Telefol corresponds with zero in Oksapmin at the end of a word after a short vowel.^{14 15 16 17 18} Note that */l/* in Mian has an allophone [d].

Mian	Tifal	Telefol	Oksapmin	Examples
l	d	d	ˀd	{#, C\$}_ 8, 30, 56, 74, 116, (167), (172)
l	l	l	l	V_V 19, 20, 76, 78, 81, 89, 91, 121, 199 _{#, \$C} 13, 21, 32, 39, 46, 59, 73, 80, 82, 87, 107, 108, 114, 139, 142, 161, 173, 177, 210
l	l	l	∅	/a/_# 9, 67

Figure 28 **/l/* reflexes in Mian, Tifal, Telefol and Oksapmin
() could also be **/ˀd/*

	Mian	Tifal	Telefol	Oksapmin	Meaning
\$_	laak	daák	daák	dəx	‘down’
V_V	klók	-	-	kulex	‘kookaburra’
	-	kaloom ~ koloom ~ kuloom	kolom	xolom	‘bird of paradise’
_#	bobol	-	búbúl	bopol	‘heart’
/a/_#	al	ol	ol	a	‘excreta’

Figure 29 Examples demonstrating **/l/* reflexes

¹³ In example 201, */s/* in Tifal and Telefol corresponds to */l/* in Oksapmin.

¹⁴ */l/* in the Mian corresponds to */n/* in Oksapmin in examples 195 and 204.

¹⁵ In example 154 */l/* in Mian corresponds to zero in Telefol and Oksapmin.

¹⁶ In example 171 */l/* in Tifal corresponds to zero in Mian, Telefol and Oksapmin.

¹⁷ In examples 137 and 174, */l/* in Oksapmin corresponds to zero in Mian, Tifal and Telefol.

¹⁸ In example 70, */l/* occurs following */a/* in Oksapmin.

*/*j/*

*/*j/* has the reflex /j/ in Mian, Tifal, Telefol and Oksapmin between vowels as shown by the examples given below.¹⁹ */*j/* is not well attested in our data.

Mian	Tifal	Telefol	Oksapmin	No. (Examples)
j	j	j	j	V_V 13, 54, 101

Figure 30 */*j/* reflexes in Mian, Tifal, Telefol and Oksapmin

	Mian	Tifal	Telefol	Oksapmin	Meaning
V_V	ajaal		kajaál	kəjel	‘bandicoot variety’

Figure 31 Examples demonstrating */*j/* reflexes

*/*ŋg/*

Word initially, */*ŋg/* has the reflex /d/ in Tifal and Telefol and /ŋg/ in Mian and Oksapmin. Between vowels, */*ŋg/* corresponds to /k/ in the Ok languages and /ŋg/ in Oksapmin. Syllable finally, */*ŋg/* corresponds to zero in Mian, /k/ in Tifal and Telefol and /ŋg/ in Oksapmin.

Mian	Tifal	Telefol	Oksapmin	No. (Examples)
g	d	d ²⁰	ŋg	{#, C\$}_ 39, 89, 103, 123, 124, 142, 145
k	k	k	ŋg	V_V 100, 208
∅	k	k	ŋg	_ {#, \$C} 78, 146

Figure 32 */*ŋg/* reflexes in Mian, Tifal, Telefol and Oksapmin

	Mian	Tifal	Telefol	Oksapmin	Meaning
{C,#}\$_	gǎl	daal	daál	gal	‘sick of’
V_V	kam	akàm	ákám	gamd	‘married couple’ ²¹
_ \${C,#}	no	nuùk	nuuk	niŋ	‘small mammal’

Figure 33 Examples demonstrating */*ŋg/* reflexes

*/*k/*

Before /i/, */*k/* has the reflex /t/ in Tifal and Telefol and /k/ in Mian and Oksapmin. In all other environments, */*k/* has the reflex /k/ in all daughter languages, as shown by the examples given below.^{22 23 24}

¹⁹ In examples 47 /j/ in Oksapmin does not have a clear correspondence to a segment in the Ok reflexes.

²⁰ It is possible that this is phonemically /k/ as “following k or ng, t becomes k and d becomes g” (Healey and Healey 1977: xvii)

²¹ Assuming original form was */*agam/*

²² In example 100, /k/ in Tifal and Telefol corresponds to /g/ in Oksapmin.

²³ In example 178, /gw/ in Mian corresponds to /k/ in Oksapmin.

Mian	:	Tifal	:	Telefol	:	Oksapmin	No. (Examples)
k	:	k	:	k	:	k	{#, C\$}_9, 13^, 55, 79, 90, 91, 96^, 127 _{#, \$C}84
k	:	t	:	t	:	k	#_i/ 7*, 48*, 65, 68, 149, 194

Figure 34 /**k/* reflexes in Mian, Tifal, Telefol and Oksapmin
 ^ Mian has zero segment corresponding to /k/ in the other languages
 * Oksapmin reflex begins with /ku/ instead of /ki/

	Mian	Tifal	Telefol	Oksapmin	Meaning
<u>i</u>	kin	tiín	tiin	kin	'eye'
{C,#}\$_	komök	kamok ~ kamokim ~ kamokseb	kamókim	kəməxem	'headman'
_{C,#}	bak 'log in ground oven'	abák		bek	'house post'

Figure 35 Examples demonstrating /**k/* reflexes

*/*x/*

*/*x/* has the reflex /x/ in all daughter languages in all environments as shown by the examples given below.²⁵

Mian	:	Tifal	:	Telefol	:	Oksapmin	No. (Examples)
k	:	k	:	k	:	x	{#, C\$}_6*, 19, 24, 32, 53, 58, 62, 82, 94^, 101, 129, 177, 193 V_V 8, 30, 59, 63, 79, 116 _{#, \$C} 56, 58, 91, 125*, 126, 169, 194

Figure 36 /**x/* reflexes in Mian, Tifal, Telefol and Oksapmin
 * Has a zero reflex in Mian
 ^ /t/ in Tifal

	Mian	Tifal	Telefol	Oksapmin	Meaning
{C,#}\$_	ke	-	ke-	x-	'do, make'
V_V	-	bokal	bokól	boxol	'eagle'
_{C,#}	laak	daák	daák	dəx	'down'

Figure 37 Examples demonstrating /**k/* reflexes

*/*k^w/*

*/*k^w/* has the reflex /k^w/ in all daughter languages in all environments as shown by the examples given below. The /k^w/ phoneme in Mian, Telefol and Oksapmin is highly

²⁴ In examples 94 and 97, /**k/* reflexes do not occur before /i/ in Oksapmin.

²⁵ In examples 161, /x/ in Oksapmin corresponds with zero in Tifal and Telefol.

restricted in its distribution and only occur in syllable-initial position before /i/, /e/ and /a/.²⁶

Mian	:	Tifal	:	Telefol	:	Oksapmin	No. (Examples)
k ^w	:	k	:	k ^w	:	k ^w	#_ 41 [^] , 115, 158

Figure 38 /^{*}k^w/ reflexes in Mian, Tifal, Telefol and Oksapmin
[^] /k/ in Oksapmin

	Mian	Tifal	Telefol	Oksapmin	Meaning
#_	kwěit	kiít	kwět	kwet	‘sugar cane’

Figure 39 Examples demonstrating /^{*}k/ reflexes

/^{*}ŋ^w/

There seems to be only one cognate with /^{*}ŋ^w/, 107, where /k^w/ in Mian corresponds with /^ŋg^w/ in Oksapmin. As Oksapmin has a /^ŋg^w/ phoneme, it is possible that this was present in the proto language. Like /k^w/, the distribution of /^ŋg^w/ in Oksapmin is restricted to syllable-initial position before /i/, /e/, and /a/.

/^{*}ŋ/

/^{*}ŋ/ has the reflex /ŋ/ in Mian, Tifal and Telefol and /^ŋg/ in Oksapmin as shown by the examples given below. /ŋ/ occurs at the end of words only except in reduplicated forms. /ŋ/ also occurs syllable-initially in Mian, although no illustrative cognates have been found to date.

Mian	:	Tifal	:	Telefol	:	Oksapmin	No. (Examples)
ŋ	:	ŋ	:	ŋ	:	^ŋ g ²⁷	_# 41, 55, 71, 76, 93, 157, 167, 171, 206

Figure 40 /^{*}ŋ/ reflexes in Mian, Tifal, Telefol and Oksapmin

	Mian	Tifal	Telefol	Oksapmin	Meaning
_#	aniŋ	aniŋ	ániŋ	aniŋ	‘fish’

Figure 41 Examples demonstrating /^{*}ŋ/ reflexes

²⁶ There is one word in Telefol where /k^w/ precedes /o/ *kwōn* ‘leaf’ although this also has the variant *kōn*.

²⁷ The word final allophone of /^ŋg/ in Oksapmin is [ŋ]. Also note that some varieties of Oksapmin have /ŋ/, see Loughnane (2009) for details

3.2. Vowels

The proposed vowel phoneme inventory for proto Ok-Oksapmin is shown in figure 42 below. Figures 43-46 set out the vowel inventories of the daughter languages. Basically, proto Ok-Oksapmin had a five-vowel system plus a length distinction, which is only preserved in Telefol and Tifal. At this stage of research, tone had not yet been reconstructed.

	Front	Central	Back
High	*i, *i:		*u, *u:
Mid	*e:, *ei		*o, *o:
Low	*a, *a:		

Figure 42 Reconstructed proto Ok-Oksapmin vowels

	Front	Central	Back
High	i, i:		u, u:
Mid	e		o
Low	a, a:		

Figure 43 Vowels in Telefol²⁸

	Front	Central	Back
High	i, i:		u, u:
Mid	e:		o, o:
Low	a, a:		

Figure 44 Vowels in Tifal

	Front	Central	Back
High	i		u
Mid	ɛ, ɛi		o, ou
Low	a, a ^ɿ , ai, au		

Figure 45 Vowels in Mian

²⁸ Although Healey (1992) distinguishes the phonemes /e/ versus /e:/ and /o/ versus /o:/, these distinctions are not represented in the orthography in the Telefol dictionary, with /e/ and /e:/ both represented by <e> and /o/ and /o:/ both represented by <o>. As such, these length distinctions have been ignored for this paper, as the cognates used were presented in the dictionary orthography.

	Front	Central	Back
High	i		u
Mid	e	ə	o
Low		a	

Figure 46 Vowels in Oksapmin

A summary of the sound correspondences for vowels in Mian, Tifal, Telefol, and Oksapmin is given in figure 47 below, along with the reconstructed proto phoneme and conditioning environment where relevant.

Mian	:	Tifal	:	Telefol	:	Oksapmin	Proto Ok-Oksapmin	Conditioning environment (if any)
i	:	i	:	i	:	i	*i	
i	:	i:	:	i:	:	i	*i:	
e	:	e:	:	e:	:	e	*e:	
ei	:	i:	:	e	:	e	*ei	
∅	:	a	:	a	:	∅	*a	#_ /g/
a	:	a	:	a	:	ə	*a	_CV(C)
a	:	a	:	a	:	a	*a	
a	:	a:	:	a:	:	a	*a:	
o	:	o	:	o	:	o	*o	
o	:	o:	:	o	:	o	*o:	
u	:	u	:	u	:	u	*u	
u	:	u:	:	u:	:	u	*u:	

Figure 47 Summary of proto Ok-Oksapmin vowels and their reflexes

*/*i/*

*/*i/* is realized as /i/ in all the daughter languages in most environments. In Oksapmin, */*i/* is lost at the start of the word before /l/.²⁹ No cognates have yet been found for this phoneme in a word final open syllable.^{30 31 32 33}

²⁹ This is an Oksapmin internal development. Such initial /i/ segments are retained in some dialects.

³⁰ In example 79, /i/ in Tifal and Telefol corresponds to /e/ in Oksapmin.

³¹ In example 114, /i/ in Telefol corresponds to /ə/ in Oksapmin.

³² In example 125, /i/ in Mian and Telefol corresponds to /ə/ in Oksapmin.

³³ In examples 7, 48, 151 and 185, /i/ in Mian, Tifal and Telefol corresponds to /u/ in Oksapmin. In example 151, this appears to be due to vowel harmony processes in Oksapmin.

Mian	Tifal	Telefol	Oksapmin	Environment	No. (Examples)
i	: i	: i	: i		#_ 3, 21, 148, 179, 191 C_C 14*, 40, 41, 50, 54^, 60, 103, 105, 116, 122, 149\$ 154, 173, 191, 194&, 210 _# -
i	: i	: i	: ø	#_ /	76, 78, 81

Figure 48 /i/ reflexes in Mian, Tifal, Telefol and Oksapmin
 * has the variant /a/ for the Tifal reflex and corresponds with /a/ in the Telefol reflex
 ^ /ij/ in Tifal corresponds with /j/ in Oksapmin which may be pronounced with an epenthetic [i] preceding the /j/
 & also has the variant /a/ in the Tifal reflex
 \$ also has the variant /a/ in the Telefol reflex

	Mian	Tifal	Telefol	Oksapmin	Meaning
#_	imăn	imaan	imaán	iman	'urine'
C_C	-	wín	wín	win	'eagle'

Figure 49 Examples demonstrating /i/ reflexes

/i:/

/i:/ is realized as /i/ in Mian and Oksapmin and as /i:/ in Tifal and Telefol in most environments.

Mian	Tifal	Telefol	Oksapmin	No. (Examples)
i	: i:	: i:	: i	#_ 106, C_C 2, 14^, 26*, 39, 52, 68, 71, 73, 190^, 196& _# 65,

Figure 50 /i:/ reflexes in Mian, Tifal, Telefol and Oksapmin
 ^ /ii/ in Tifal and /i/ in Oksapmin correspond with /aa/ in Telefol
 * /ii/ in Tifal and /i/ in Oksapmin correspond with /u/ in Mian and /uu/ in Telefol
 & /i/ in Mian and /ii/ in Telefol correspond with /a/ in Tifal and /o/ in Oksapmin

	Mian	Tifal	Telefol	Oksapmin	Meaning
#_	-	iín	iín	in	'nasal mucus, sinus'
C_C	kin	tíín	tiin	kin	'eye'
_#	-	tii	tii	ki	'enough'

Figure 51 Examples demonstrating /i:/ reflexes

/e/

/e/ is realized as /e/ in Mian and Oksapmin and as /e:/ in Tifal and Telefol in all environments.^{34 35 36 37}

³⁴ In the first syllable of example 181, /e/ in Mian corresponds with /i/ in Telefol and /ə/ in Oksapmin.

Mian	Tifal	Telefol	Oksapmin	No. (Examples)
e	e:	e	e	C_C 20, 21, 78, 82, 86, 96, 107, 114, 129, 152, 165, 181 [^]

Figure 52 /**e/* reflexes in Mian, Tifal, Telefol and Oksapmin
[^] /*e/* in Mian and Oksapmin corresponds with /*i/* in Telefol

	Mian	Tifal	Telefol	Oksapmin	Meaning
C_C	tem	tem	tem	tem	'in, hole'

Figure 53 Examples demonstrating /**e/* reflexes

/i/

/i/ is realized as /*ei/* in Mian³⁸, /*i:/* in Tifal, and as /*e/* in Telefol and Oksapmin in all environments.

Mian	Tifal	Telefol	Oksapmin	No. (Examples)
ei	i:	e	e	#_ 118, 130, C_C 24, 124, _# 158

Figure 54 /**ei/* reflexes in Mian, Tifal, Telefol and Oksapmin

	Mian	Tifal	Telefol	Oksapmin	Meaning
#_	ěit		ět	et	'penis'
C_C	geim		dem	gem	'pronged arrow'
_#	kwěit	kiít	kwět	kwet	'sugar cane'

Figure 55 Examples demonstrating /**ei/* reflexes

/a/

/a/ is realized as /a/ in Mian, Tifal, Telefol and Oksapmin in most environments.
 /a/ is realized as /a/ in Mian, Tifal and Telefol and as zero in Oksapmin at the start of a word preceding /^ŋg/.^{39 40 41 42}

³⁵ In example 32, /a/ in Tifal corresponds with /e/ in Oksapmin.

³⁶ In example 91, /o/ in Mian corresponds with /e/ in Oksapmin.

³⁷ In example 162, /e/ in Mian, Tifal and Telefol corresponds with /a/ in Oksapmin.

³⁸ In Upper Oksapmin, the diphthong is retained in these cognates (Lawrence's orthography in italics with our phonemic interpretation in slash brackets): *heim* /xəim/ 'blood', *eit* /əit/ 'penis' *geim* /^ŋgəim/ 'pronged arrow', *eip* /əip/ 'salt', *kweit* /k^wəit/ 'sugar cane' (Lawrence 1993)

³⁹ In example 189, /a/ in Mian, Tifal and Telefol corresponds with /e/ in Oksapmin.

⁴⁰ In examples 76, 131, 157 and 173, /a/ in Mian, Tifal and Telefol corresponds with /ə/ in Oksapmin in a monosyllabic word.

⁴¹ In example 94 and 140, /a/ in Mian, Tifal and Telefol corresponds with /ə/ in Oksapmin in both syllables in a word of the form CVCCVC.

⁴² In examples 125, 148 and 199, /a/ in Mian, Tifal and Telefol corresponds with /ə/ in Oksapmin in the second syllables in a word of the form VCVC.

Mian	Tifal	Telefol	Oksapmin	No. (Examples)
∅	a	a	∅	_/g/V 100, 208
a	a	a	ə	_CV 6, 8, 13, 20, 38*, 63, 70, 71, 79\$, 82, 87, 90, 101, 129, 159^, 161, 162, 173, 189
a	a	a	a	_(C)# 8, 9, 50, 55@, 67&, 83, 100, 104, 135, 167, 174, 182, 194, 204, 205&

Figure 56 /*a/ reflexes in Mian, Tifal, Telefol and Oksapmin

^ zero in Mian at start of word

& /a/ in Mian and Oksapmin corresponds with /o/ in Tifal and/or Telefol

* Also has the variant correspondences /i/ and/or /o/ in Tifal

\$ /o/ in Mian corresponds with /a/ in Tifal and Telefol and /ə/ in Oksapmin

/e/ in Mian corresponds with /a/ in Tifal and Telefol and /ə/ in Oksapmin

@ /o/ in Telefol corresponds with /a/ in Tifal and Oksapmin

	Mian	Tifal	Telefol	Oksapmin	Meaning
_/g/V	-	aká	akák	ga	'molar, tooth'
_CV	ánât	kanaàt	kanaát	xənat	'arrow'
_#	bitá-	bíta-	pira	bitá-	'cut/shave hair'

Figure 57 Examples demonstrating /*a/ reflexes

/*a:/

/*a:/ is realized as /a/ in Mian and Oksapmin and as /a:/ in Tifal and Telefol in most environments.⁴³

Mian	Tifal	Telefol	Oksapmin	No. (Examples)
a	a:	a:	a	C_C 6, 54, 87*, 110, 142, 159&, 161, 179, 183, 190*, 197&, 201

Figure 58 /*a:/ reflexes in Mian, Tifal, Telefol and Oksapmin

* Corresponds with /a/ in Telefol

& Corresponds with /a/ in Tifal

	Mian	Tifal	Telefol	Oksapmin	Meaning
C_C	imǎn	imaan	imaán	iman	'urine'

Figure 59 Examples demonstrating /*a:/ reflexes

The Mian pharyngealized vowel /a^ɣ/ appears to correspond with /*a:/ but the conditioning environment is not clear at this stage of research and the number of cognates with pharyngealized /a^ɣ/ in Mian is limited.

⁴³ In example 115, /aa/ in Telefol corresponds with /e/ in Oksapmin.

*/*o/*

*/*o/* is realized as /o/ in Mian, Tifal and Telefol and Oksapmin. /o/ is not attested in cognates word initially or finally.

Mian	Tifal	Telefol	Oksapmin	No. (Examples)
o	o	o	o	C_C 19*, 30, 43, 59 [^] , 79, 80&, 122, 126, 149, 154, 165, 177*, 193

Figure 60 */*o/* reflexes in Mian, Tifal, Telefol and Oksapmin
 * Tifal also have variants with /u/ and /a/ for this segment
 ^ /a/ in Tifal corresponds with /o/ in Telefol and Oksapmin
 & /o/ in Mian and Oksapmin corresponds with /u/ in Telefol
 \$ Tifal and Telefol also have variants with /a/ and /i/ for this segment

	Mian	Tifal	Telefol	Oksapmin	Meaning
C_C		koloom	kolom	xolom	'bird of paradise'

Figure 61 Examples demonstrating */*o/* reflexes

*/*o:/*

*/*o:/* is realized as /o/ in Mian, Telefol and Oksapmin and as /o:/ Tifal.

Mian	Tifal	Telefol	Oksapmin	No. (Examples)
a	o:	o	o	C_C 19, 38&, 85&, 101 _# 12 [^] ,

Figure 62 */*o:/* reflexes in Mian, Tifal, Telefol and Oksapmin
 & /a/ in Oksapmin
 ^ /i/ in Oksapmin

	Mian	Tifal	Telefol	Oksapmin	Meaning
C_C		kajoðb	kájob	xəjop	'moon'
_#	=sa	-soo	-só	=si	'and, with'

Figure 63 Examples demonstrating */*o:/* reflexes

*/*u/*

*/*u/* is realized as /u/ in Mian and Oksapmin and as /u/ in Tifal and Telefol in most environments.^{44 45}

Mian	Tifal	Telefol	Oksapmin	No. (Examples)
u	u	u	u	#_ 183, C_C 96, 151

Figure 64 */*u/* reflexes in Mian, Tifal, Telefol and Oksapmin

⁴⁴ In example 91, zero in Mian corresponds to /u/ in Oksapmin.

⁴⁵ In example 172, /u/ in Mian corresponds to /ə/ in Oksapmin

	Mian	Tifal	Telefol	Oksapmin	Meaning
#_	usǎn	usaan	usaán	usan	‘vomit’
C_C	usem			kusem	‘magic’

Figure 65 Examples demonstrating /*u/ reflexes

/*u:/

/*u:/ is realized as /u/ in Mian and Oksapmin and as /u:/ in Tifal and Telefol in most environments.⁴⁶

Mian	:	Tifal	:	Telefol	:	Oksapmin	No. (Examples)
u	:	u:	:	u:	:	u	C_C 81, 112 [^] , 120, 169

Figure 66 /*u:/ reflexes in Mian, Tifal, Telefol and Oksapmin
[^] /u/ in Tifal

	Mian	Tifal	Telefol	Oksapmin	Meaning
C_C	ilǔm	ùlùùm ~ luùm	iluúm	lum	‘heavy’

Figure 67 Examples demonstrating /*u:/ reflexes

4. Cognate inflectional morphology

In this section a number of different paradigms with cognate bound morphology are presented. These are considered the strongest proof of the shared origin of the Ok languages and Oksapmin.

4.1. Tense/aspect suffixes derived from the existential verb

Oksapmin, Mian, Tifal and Telefol have cognate irregular verb stem alternation for the existential verb to indicate a change in aspect. The reflexes are shown in Figure 68 below. Note that the meanings appear to have been swapped in Telefol; the reason for this swap in meaning is unclear at this stage of research.

⁴⁶ In example 46, /u:/ in Telefol corresponds to /o/ in Oksapmin.

	Perfective	Imperfective
Proto Ok-Oksapmin	*(V)n-	*p(V)-
Oksapmin	<i>in- ~ en-</i> ⁴⁷	<i>pt-</i>
Mian	<i>n-</i>	<i>bi- ~ bl-</i>
Tifal	<i>n-</i>	<i>b-</i>
Telefol	<i>bii-</i>	<i>n-</i>

Figure 68 Irregular aspect stems for the verb ‘be’ in Oksapmin, Telefol and Mian

In Oksapmin, Mian, Tifal and Telefol, the different forms of the verb ‘be’ have developed into tense/aspect suffixes which occur immediately following the verb root in each language. The reflexes and their synchronic meanings are shown in Figure 69 and Figure 70 below.

	*p(V)	Meaning
Oksapmin	<i>-pat, -pti</i>	‘imperfective (sg, pl)’
Mian	<i>-b</i>	‘imperfective’
Telefol	<i>-b</i>	‘present (continuative)’
Tifal	<i>-b</i>	‘present’
Faiwol	<i>-b</i>	‘present (continuative)’
Bimin	<i>-b</i>	‘present (continuative)’

Figure 69 Reflexes of the suffix *p in Oksapmin, Mian, Telefol, Tifal, Faiwol and Bimin
Source for Telefol, Faiwol Bimin: Healey 1964: 73
Source for Tifal: Healey and Steinkraus 1972

	*(V)n	Meaning
Oksapmin	<i>-n</i>	‘perfective’
Mian	<i>-n</i>	‘perfective auxiliary’
Tifal	<i>-n</i>	‘near past’
Telefol	<i>-n</i>	‘immediate past’
Kati	<i>-en</i>	‘perfect’

Figure 70 Reflexes of the suffix *-n in Oksapmin, Mian and Tifal
Source for Kati: Healey 1964: 73
Source for Tifal: Healey and Steinkraus 1972

The Mian reflex of *p(V), *-b* ‘imperfective’ is shown in(1) below. The Mian reflex of *(V)n, *-n* ‘perfective auxiliary’ is shown in (2) below.

- (1) *ó soflitaanó ifu-b-o=be*
she vegetables serve.IPFV-IPFV-3SG.F.SBJ=DECL
‘She is serving vegetables’

⁴⁷ Some speakers analyse this verb stem as *id- ~ ed-* (see Loughnane 2009 for details).

- (2) *ó soflitaanó ifa-n-amab-i=be*
 she vegetables serve.PFV-PFV.AUX-IRR-1SG. SBJ=DECL
 ‘She will serve food.’

Perfective aspect markers developing into a past marker (as found in Telefol and Tifal) is a cross-linguistically attested meaning change (see Bybee, Perkins and Pagliuca 1994).

The Oksapmin reflex of **p(V)*, *-pat* ‘imperfective singular’⁴⁸ is shown in (3) below. The Oksapmin reflex of **(V)n*, *-n* ‘perfective’⁴⁹ is shown in (4) below. It is possible that Oksapmin has innovated by adding additional phonological material to the imperfective marker to indicate the number of the subject.

- (3) *su-pat-gop*
 kill-IPFV.SG-VIS-FP.SG
 (I saw that) (he) was killing.

- (4) *su-n-gop*
 kill-PFV-VIS.FP.SG
 (I saw that) (he) killed.

4.2. **-s past*

A number of Ok languages have a past suffix /s/: Telefol *-s* ‘far past’, Tifal *-s* ‘past’, Faiwol *-s* ‘past’, Bimin *-s* ‘past’ (Healey 1964: 73), Mian *-s* ‘remote past’. The far past habitual forms for Oksapmin are *-sux* ‘far past habitual singular’ and *-sxe* ‘far past habitual plural’ which may possibly be cognate assuming that Oksapmin has innovated by adding phonological material indicating a number distinction for the subject.

- (5) *ó soflitaanó ifa-s-o=be*
 she vegetables serve.PFV-RPST-3SG.F.SBJ=DECL
 ‘She served food (in the remote past).’

- (6) *su-sux*
 kill-HAB.FP.SG
 ‘He/she used to kill.’

⁴⁸ The plural form is *-pti* ‘IPFV.PL’.

⁴⁹ Oksapmin also has the perfective suffixes *-ti*, *-di*, *-si* and *-xi* which are used with the non-visual past tense forms. *-ti* is used with the majority of verbs; *-di* with a smaller subset of verbs; *-si* and *-xi* are used with verbs of motion.

4.3. *-in verbal noun

In Telefol, Tifal, Faiwol, Bimin and Mian the suffix *-in* marks “customary or infinitive, and when followed by a negative particle this form signifies negative customary or infinitive” (Healey 1964:72). Fedden (2007) analyses this form as a verbal noun in Mian. In Oksapmin, the suffix *-n* also signifies a verbal noun (as well as second person imperative).

(7) *kéb on-nam-in mēb tl-Ø-o=be*
 MIAN your **go.PFV-PFV-VN** close come.PFV-REAL-N2.SBJ=DECL
 ‘Your going (away) has come close’

(8) *sup=si itəp ixit əpli-n kakdup*
 OKS mother.3POSS=CNJ father.3POSS 3d **come-NOM** close

x-ptin=a
 be-IPFV.PL.NOM=CNJ
 ‘When it was almost time for the parents to come home...’

4.4. *-m purposive serialization

In both Mian and Oksapmin, *-m* indicates purposive serialization. The purpose of the action is marked with /m/ and occurs before a verb of motion as shown in (9) and (10) below.⁵⁰

(9) *no=i bu-m un-Ø-e-bio=a*
 MIAN marsupial=PL.AN hunt-IPFV go.PFV-DS.SEQ-3SG.M.SBJ-GPST=MED
 ‘after he had gone hunting marsupials, (it got dark) ...’ [Crows]

(10) *nij dalxə-m s-pat-n=a*
 OKS marsupial hunt-SEQ go-IPFV.SG-NOM=CNJ
 ‘When he was going to hunt for marsupials, ...’

⁵⁰ The suffix *-m* is also used in Oksapmin in a separate construction to indicate a same subject medial verb. This construction differs from the purposive use of *-m* in that the word order is iconic in relation to the order of occurrence of the actions.

4.5. *-Vl Plural Marker for Dyads and Lexical Kin Nouns

Dyadic kin terms and lexical kin nouns in Oksapmin and a number of Ok languages have cognate plural suffixes as shown in Figure 71.

	*Vl
Oksapmin	-il
Mian	-wal
Telefol	-al ~ -il
Tifal	-al ~ -il
Kati	-a
Bimin	-er

Figure 71 Reflexes of the suffix *-Vl
 Source for Kati and Bimin: Healey 1964: 63
 Source for Tifal: Healey and Steinkraus 1972
 Source for Telefol: Healey and Healey 1977

Sample dual and plural dyadic kin terms are shown for Mian, Tifal, Telefol and Oksapmin in Figure 72 below.

	Mian	Tifal	Telefol	Oksapmin	Meaning
du	<i>kam</i>	<i>ak(d)am</i>	<i>ákám</i>	<i>gamd</i>	husband and wife
pl	<i>kamwal</i>	<i>akmal</i>	<i>úkmál</i>	<i>gamdil</i>	husband and wives
du	<i>hat</i>	<i>awaat</i>	<i>áfaat</i>	<i>imd ~ umd</i>	mother and child
pl	<i>hatwal</i>	<i>abtil</i>	<i>úbtíl</i>	<i>imdil ~ umdil</i>	mother and children

Figure 72 Sample dual and plural dyadic kin terms in Mian, Tifal, Telefol and Oksapmin
 Source for Tifal: Healey and Steinkraus 1972
 Source for Telefol: Healey and Healey 1977

	Mian	Meaning	Telefol	Meaning	Oksapmin	Meaning
sg	<i>hek</i>	older brother	<i>baáb</i>	my/our older brother	<i>nonip</i>	my/our older brother
pl	<i>hekwal</i>	older brothers	<i>baábal</i>	my/our older brothers	<i>nonipil</i>	my/our older brothers
sg	<i>en</i>	older sister	<i>baábén</i>	my/our older sister	<i>nonop</i>	my/our older sister
pl	<i>enwal</i>	older sisters	<i>baábénal</i>	my/our older sisters	<i>nonopil</i>	my/our older sisters
sg	<i>biém</i>	mother	<i>âbén</i>	my/our mother	<i>sup</i>	her/his/their mother
pl	<i>bienwâl</i>	mothers	<i>âbénal</i>	my/our mothers	<i>supil</i>	her/his/their mothers

Figure 73 Sample singular and plural lexical kin terms in Mian, Tifal, Telefol and Oksapmin
 Source for Tifal: Healey and Steinkraus 1972
 Source for Telefol: Healey and Healey 1977

4.6. *-p Third person in Lexical Kin Terms

Oksapmin, Tifal and Telefol lexical kin terms all show reflexes of *-p indicating a third person possessor. As in a number of Ok languages, Oksapmin lexical kin terms

inflect for the person of the possessor. The majority of lexical kin nouns form the third person possessed form through the addition of /p/ to the first or second person form as shown in Figure 74 below.⁵¹

Meaning	1sg	2sg	3sg
mother, mother's sister	<i>em</i>	<i>sja</i>	<i>sup</i>
father, father's brother	<i>at ~ ita</i>	<i>ita</i>	<i>itap</i>
grandparent, grandchild	<i>aw</i>	<i>ala</i>	<i>alop ~ alap</i>

Figure 74 Person of the possessor marking in Oksapmin kin terms

Tifal and Telefol also inflect lexical kin terms for person of the possessor but have a different set of possessor morphology based on the free pronouns (e.g. with the prefix *k-* ~ *t-* to indicate second person presumably derived from the second person pronoun *kabí*). There are, however, a number of suppletive third person forms which end in /b/ akin to the Oksapmin system as shown in Figure 75 and Figure 76 below.

	1sg	2sg	3sg
father	<i>áatum</i>	<i>kaáláb</i>	<i>aáláb</i>
half-sister/step-sister	<i>námdalén</i>	<i>kámdalén</i>	<i>ímdalén ~ ímdalib</i>
aunty (mother's older sister)	<i>môbok</i>	<i>kúgúlob</i>	<i>úgúlob</i>

Figure 75 Person of the possessor marking in Telefol kin terms

	1sg	2sg	3sg
father	<i>atámén ~ atámón</i>	<i>kaàlàb</i>	<i>aàlàb</i>

Figure 76 Person of the possessor marking in Tifal kin terms

It is probable that these forms have retained from the proto-language as it is unlikely that this is an innovation in Oksapmin because there are no pronouns which have /p/ to indicate third person which could have served as a source for the third person possessor marking.

4.7. Pronoun Suffixes/Clitics: *sV 'With', *tap 'Like', *xVl 'Reflexive', *xVp 'Alone'

Oksapmin and the Ok languages have a number of cognate pronoun suffixes and clitics as shown in Figure 77 below.

⁵¹ There are, however, a number of irregularities to the system, see Loughnane (2009) for details.

Meaning	Oksapmin	Mian	Telefol	Tifal	Faiwol
with, and	=si	=sa	-só	-soo	-soo
like	=təp ‘associative’	-	-táb	-tab	-
alone	-xap ~ -gap [^]	-	-kúp ‘exclamatory’	-	-
reflexive, self	-xol ~ -gol [^]	-skil	-kal ~ -kol ~ -kil	-kal ~ -kol ‘emphatic’	-kal

Figure 77 Pronominal suffix forms for Oksapmin, Mian, Telefol, Tifal and Faiwol
Source for Telefol: Healey and Healey 1977
Source for Tifal: Healey and Steinkraus 1972
Source for Faiwol: Healey 1964: 66
[^]Form irregular due to assimilation to preceding voiced velar stop, see appendix 2 for details

5. Cognate paradigms

In this section two cognate paradigms in the Ok languages and Oksapmin are presented: demonstratives and pronouns.

5.1. Demonstratives

In Telefol, Tifal, Mian and Oksapmin, a distance-indicating demonstrative plus an elevation demonstrative/directional combine to form a single phonological word (and in at least Oksapmin, this is also a single morphological word). A number of these forms are cognate and the way in which they combine is also the same.

Telefol	Tifal	Mian	Oksapmin	pOk-Oksapmin	Meaning
<i>ma-</i>	<i>mi- ~ m-</i>		<i>mə-</i>	<i>*mV-</i>	here
		<i>i-</i>	<i>i-</i>	<i>*i-</i>	there
<i>daák</i>	<i>daák</i>	<i>laak</i>	<i>dəx</i>	<i>*dVVx</i>	down

Figure 78 Cognate demonstrative and related locational forms in Telefol, Tifal, Mian and Oksapmin

- (11) MIAN *i-laak*
TELE *kulaák*
OKS *i=dəx*⁵²
‘Down/below there.’

⁵² Unlike *xət* ‘up’ which occurs as inflectional morphology on the proximal and distal demonstratives, *dəx* ‘down’ is a locational noun to which the demonstratives cliticize.

- (12) MIAN *é-wit*
 TELE *miít*
 Oks *mə-xət*
 ‘Up here.’

5.2. *Emphatic pronouns*

In addition to the regular series of pronouns, the Ok languages have a second emphatic pronoun series. Healey reports that “[s]everal of the Mountain-Ok languages have a second set of pronoun roots containing a medial /l/ or /ɾ/, and these roots only take a few of the suffixes that occur with pronoun roots. In Telefol these roots with medial /l/ are more emphatic than the main set of roots” (Healey 1964: 66). This second series of pronouns is shown in the table below for a number of Ok languages. The step by step reconstruction of the old Oksapmin emphatic forms is found in appendix 2.

Gloss	Telefol	Tifal	Faiwol	Mian	Reconstructed Oksapmin forms (see Appendix 2)	pOO
1s	<i>nala-</i>	<i>nila-</i>	<i>nala-</i>	<i>néle-</i>	<i>*nol</i>	<i>*nVl(V)</i>
1p(EX)	<i>nulu-</i>	<i>nuúli-</i>	<i>nulu-</i>	<i>níli-</i>	<i>*nuxlal</i>	<i>*n{u,i}lV</i>
1pIN			no data	<i>nilib-</i>	<i>*dilal</i>	<i>*{n,d}ilV</i>
2s	f <i>kulub-</i>	<i>kultub-</i>		<i>ólob-</i>	<i>*gol</i>	<i>*{g,k}Vl</i>
	m <i>kalab-</i>	<i>kaltab-</i>		<i>kéleb-</i>		
2p	<i>ilib-</i>			<i>ilib-</i>	<i>*gulal</i>	?
3sf	<i>ulu-</i>	<i>ulu-</i>		<i>ólo-</i>	<i>*ul</i>	<i>*Vl(V)</i>
3sm	<i>ila-</i>	<i>ala-</i>		<i>éle-</i>	<i>*ol</i>	<i>*Vl(V)</i>
3p	<i>ili-</i>	<i>ila-</i>		<i>ili-</i>	<i>*ixlal</i>	<i>*il(V)</i>

Figure 79 Emphatic pronoun forms in Telefol, Tifal, Faiwol (Healey 1964) and Mian (SF)

6. Conclusion

In this paper the following evidence has been provided that points to a genetic relatedness between Oksapmin and the Ok languages. The following are cognate:

- lexemes which exhibit regular sound changes
- verbal affixes
- (partial) paradigms of kin nouns
- kin noun and dyad morphology
- pronominal morphology
- paradigms of demonstratives and pronouns

This evidence suggests that Oksapmin and the Ok languages share a genetic origin. In a language contact situation such as that which existed in New Guinea for millennia, however, it is not possible to discount the possibility that this similarity is due to extensive and prolonged contact between these languages. Work which remains to be done to provide further evidence of a possible relationship between Oksapmin and the Ok languages includes: reconstruction of tone and inclusion of cognate morphology from Lowland and Western Ok languages.

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Appendix 1 – Ok-Oksapmin cognates

Mian forms from SF’s field notes. Tifal forms from Healey and Steinkraus (1972). Telefol forms are from Healey (1964) and Healey (1977). Upper Oksapmin forms (provided where different from or unknown for Lower Oksapmin) are from Lawrence (1993), with the orthography converted. All Lower Oksapmin forms from RL’s field notes. (Note that some numbers in the sequence are missing.)

	meaning	Mian	Tifal	Telefol	Upper Oksapmin	Lower Oksapmin	pOk-Oksapmin
2	appetizer			imiín	imin	-	*imin
5	arrow type 1	án	wan	ún		ən	*(w)Vn
6	arrow type 2	anat	kanaàt	kanaát		xənat	*xanaat
7	ashes	kib	(as-)tib	(at) tib		kup	*kip
8	ask		daka-	dáká-		dəxa	*daxa
9	at (place)		kal	kal		ka	*kal
12	and, with	-sa	-soo	-só		-si	*soo
13	bandicoot variety	ajaal		kajaál		kəjel	*kajaal
15	bat variety 2		jawom	jóm		juwam	*jVwVm
16	be, stay 1	bi		bii		pt-	*p(i:)
17	be, stay 2	n-		n-		in-	*(i)n
19	bird of paradise		kaloom ~ koloom ~ kuloom	kolom		xolom	*xoloom
20	bird variety 1		alèm	além		əlem	*aleem
21	bird variety 2		ilnem	ílnem		ilnem	*ilnem
24	blood		kiím		xəim		*xeim
26	blunt (of e.g. knife)	fũm	fiím	fuúm	pim		*fiim
30	break, dislocate (bone)			dóko (kubka-)		dox	*doxo
32	burn / light fire		kál-			xel-	*xVl
35	cassurina tree	lleb ‘tree variety’	titíb ~ tatíb	títíb		dələp	*dVtVp
36	chest (bone)	tub	tuùb (kun)	tuub (kún)		(təm) tom	*tVVb
38	cockroach	tanam	tanoòm ~ tinoòm ~ tonoòm	tánom		tənam	*tanoom

39	cold	gil	dífl	diil	girir(-si)		*giil
41	collar bone	kwiŋ		kwiŋ (kun)	kiŋ (təm)		*k ^w iŋ
46	crumbs			búul		bol	*bVVl
48	cucumber	kimit	timít	támít ~ tímít		kumul	*kimVd
50	cut (hair), shave (hair)		bitá-	bíta-	pira		*pida-
52	dirty (of water)	mim	miim	miim	mimjox		*miim
53	do / make	ke		ke-		x-	*xV-
54	dog		mijaan			mjan	*mVjaan
55	domestic pig		kəŋ	koŋ		kəŋ ('wild pig')	*kVŋ
56	down, below	laak	daák	daák		dəx	*daak
58	dry		kòk ~ koòk			xəx	*xV(V)x
59	eagle, eagle variety		bokal	bokól		boxol	*boxVl
62	emphatic pronoun marker			-kúb		-xap	*-xVp
63	enemy 1	makǎ				məxaw	*maxaw
65	enough		tii	tii		ki	*kii
67	excrement	al	ol	ol		a	*Vl
68	eye	kin	tín	tiin		kin	*kiin
70	fern		abal	abál		əbal	*abal
71	fish	aniŋ	aniŋ	ániŋ		əniŋ	*aniŋ
73	frog variety			sií(l)siil	sirsir		*siisiil
74	fruit			ɗum	dəm		*dVm
76	garden	láj	laŋ	íláj	rəŋ	ləŋ	* (i)laŋ
78	greedy, selfish			ilék	reŋ		*ilek
79	headman, leader	komǒk	kamok ~ kamokim ~ kamokseb	kamókím		kəmoxem	*kVmoxVm
80	heart	bobol		búbúl		bopol	*bVpVl
81	heavy	ilum	ùluùm ~ luùm	iluúm		lum	*iluum
82	hornbill		kawèl	kabél		xəwel	*xawel
84	house post	bak 'log in ground oven'	abák			bek	* (V)bVk
85	husk (of nut)		woóm ~ oóm	ǒm		am	* (w)VVm
86	in, hole	tem	tem	tem		tem	*tem

87	itchy		abaàlàbaál-	abal abaál	əbaləbal		*abaalabaal
89	kidney	geil	delàb ~ dalàb	dal		gəli	*gV(V)l(V)(p)
90	knee			kátuun		kətin	*katVVn
91	kookaburra	klók				kulex	*k(V)IVx
93	light (weight)		foóŋ ~ fōŋ	fōŋ		pəŋ	*fVVŋ
94	little finger	kaket	titkát ~ tatkát	kakkát		xətɬət	*xatɬat
96	magic	usem			kusem		*kusem
100	molar / tooth		aká	akák		ga	*aga(k)
101	moon		kajoòb	kájob		xəjop	*kajoop
103	mosquito			dimdíim		gimgin	*gimgin
105	name		wín	wín		win	*win
106	nasal mucus		iín (oòk)	iín		in	*iin
107	neck, throat	kwel	dèl	del ('throat')		gwel	*g ^w el
108	needle	sil	síl	síl		sul	*sVI
110	nettle variety	(keke)wan		wáán	wan		*waan
112	nose		mitúm ~ matúm ~ mutúm	mútuúm ~ múluúm		lum	*(mu)duum
113	no!	besa 'nothing, only'		baes		bəs	*bV(V)s(V)
114	old			biséel ('elder', 'adult')		pəsel	*pVsel
115	pancreas			kwaanaal		kwen	*k ^w VVn
116	part of floor			díkím	dixim		*dixim
118	penis	ěit		ět	əit	et	*eit
120	point, tip			fuút		put	*puut
121	poor		bulub	bulúb	borop		*bVIVp
122	possum variety			sōbím ~ sōb		sopim	*sopim
123	pregnant		dubin(-so)	dubín ~ dibín		(blel) gəpən(- si)	*gVpVn
124	pronged bird arrow	geim		dem	gəim	gem	*geim
125	pus	isă		isák ('blood')		əsəx	*isax
126	rain shower	sök				sox	*sox
129	roundworm			ol kásen		xəsen	*kasen
130	salt (traded from		iib	éb	əip		*eip

	Oksapmin)						
131	same as, like		-tab	-táb		-təp (‘together’, ‘with’)	*tap
135	seedling / plant / container	san	san	san		san	*san
139	sharp	tol	atul	átúl	ətor		*atVl
142	fed up with	gǎl	daal	daál		gal	*gaal
145	sit with feet and legs together	gobtou			goptəxə-		*goptV(V)
146	small mammal	no	nuúk	nuuk		niŋ	*nVVg
148	snake / snake variety	inǎb	ináb	ináb		inəp	*inap
149	sorcery			tímon ~ támon	kimon		*kimon
151	spark			titúb	tutup		*tVtup
154	squash 1	soflit		sófit		sopit	*sof(l)it
155	squash 2			síko		sako	*sVko
157	story	sáŋ	sáŋ	saŋ		səŋ	*saŋ
158	sugarcane	kwěit	kiit	kwět	kwəit	kwet	*k ^w eit
159	sun	tan	atán	átaan		ətan	*ataan
161	sweet, tasty		abaàl	abaál		xəbal	*xabaal
162	taboo	awěm	awèm	abém		əwam	*awem
166	temporary	un		kuun	kakun		*(ka)kuun
167	thin	liŋlaŋ			daŋ		*daŋ
169	tobacco (Possibly loan from sabaka, Laba 1996)		suúk	súuk		sux	*suux
171	tongue	hǎaŋ	filáŋ ~ faláŋ	föŋ		paŋ	*fV(lV)ŋ
172	top / bottom of taro	lǔm				dəm	*dVm
173	trap		abil	ábíl	əbir		*abil
177	self, reflexive		-kal ~ -kol	-kal ~ -kol ~ - kil		-xol	*xol
179	urine	imǎn	imaan	imaán		iman	*imaan
180	vein	mamel		mumél ~ memél ~ mamél		me	*mamel
183	vomit	usǎn	usaan	usaán	usan		*usaan
185	warm	mimin	mimín ~	mimín		mumun(-si)	*mVmVn

			mamín				
186	wasp	ĩm 'bee'	iím	iím		om(sup)	*VVm
189	white cockatoo	nama	nama	námá-		nəme	*nama
190	wild pig		saàmiín	sámaan		samin	*saamVVn
191	wind		iním		inim		*inim
193	yellow 1			kob	xop		*xop
194	yellow 2		títak ~ tatak	títák		kitax	*kitax
196	child	mĩn	màn	miin		mon ('son')	*mVVn
197	father.1POSS1		atùmón	áatúm		at	*at(umon)
199	father.3POSS	aaleb	aàlàb	aáláb		ələp (‘grandfather .3POSS’)	*VVlap
201	in-law.1POSS			baat		bal	*baad
202	man's sister	băab (‘father's younger sister’)			bep		*bVVp
205	uncle.1POSS	maameín		mom		mam	*mV(V)m(ein)
206	younger brother	niŋ	niŋ	niŋ		unuŋ ('boy')	*VnVVŋ
208	husband and wife	kam	akàm	ákám		gamd	*agam
210	mother and children		abtil	úbtil		umdil	*Vbdil

Comments:

16 – /t/ added in Oksapmin

35 – Second /l/ in Mian should be /t/ according to the current analysis

39 – Second syllable added in Oksapmin

52 – Oksapmin added /jox/

63 – Mian has lost /w/ here, this is a Mian internal process

112 – First syllable lost in Oksapmin

115 – *kwaanaal* is probably a compound with a second nominal stem *aal*

145 – /xə/ added in Oksapmin

180 – /ma/ lost in Oksapmin

205 – Additional material /ein/ in Mian

Appendix 2: The step by step reconstruction of the old Oksapmin emphatic forms

Oksapmin has two additional pronoun series: reflexive and ‘alone’. It is probable that both of the Oksapmin series are derived from a single Ok-Oksapmin emphatic series. The reconstructed forms of the hypothesized old Oksapmin emphatic series are shown in the table below along with the modern reflexive and ‘alone’ series.

Oksapmin reflexive	Oksapmin ‘alone’	Reconstructed Oksapmin emphatic series	Gloss
nonxol	nonxap	*nol	1s
nuxtanut	nuxtalxe	*nuxtal	1dEX
nuxlanul	nuxlalxe	*nuxlal	1pEX
ditadit	ditalxe	*dital	1dIN
diladil	dilalxe	*dilal	1pIN
golgol	golgap	*gol	2s
gutagut	gotalxe	*gotal	2d
gulagul	gualxe	*gual	2p
olxol	olxap	*ol	3sf
ulxol	ulxap	*ul	3sm
ixtaxit	ixtalxe	*ixtal	3d
ixlaxil	ixlalxe	*ixlal	3p

Figure 80 Emphatic and ‘alone’ pronoun forms in Oksapmin

The emphatic Ok forms are based on the regular pronoun series plus /a/ or /l/V (from forms which include second person this precedes /b/). The Oksapmin reconstructed emphatic series is based on the regular pronoun series plus /l/ or /al/. The emphatic series in Ok and the reconstructed emphatic series in Oksapmin appear to be cognate.

A detailed reconstruction of the development of the reflexive and ‘alone’ series from the Oksapmin emphatic series follows. All reconstructed forms are marked with an asterisk. All forms not marked by an asterisk are present in modern Oksapmin.

At an early stage (Hypothesized stage 1) there were only two pronoun series in Oksapmin: regular; and emphatic.

Regular series	Emphatic series	Gloss
nox	*nol	1s
nuxut	*nuxtal	1dEX
nuxul	*nuxlal	1pEX
dit	*dital	1dIN
dil	*dilal	1pIN
go	*gol	2s
gut	*gotal	2d
gul	*gual	2p
ux	*ol	3sf
ox	*ul	3sm
ixit	*ixtal	3d
ixil	*ixlal	3p

Figure 81 Hypothesized stage 1

At some later stage (Hypothesized stage 2) the emphatic pronoun series in Oksapmin could no longer occur without one of the pronominal suffixes *-xol* ‘reflexive’ or *-xap* ‘alone’ for singular referents. (Note that both of these forms have Ok cognates, see next section.)

Oksapmin reflexive	Oksapmin ‘alone’ series	Gloss
*nolxol	*nolxap	1s
*golxol	*golxap	2s
*olxol	*olxap	3sf
*ulxol	*ulxap	3sm

Figure 82 Hypothesized stage 2

At a further later stage (Hypothesized stage 3), the forms for the dual and plural referents were also distinguished: the reflexive series by the addition of the regular pronoun to emphatic one; and the ‘alone’ series by the addition of the suffix *-xe* (to give rise to the modern dual and plural ‘alone’ forms).

Oksapmin reflexive	Oksapmin 'alone' series	Gloss
*nuxtalnuxut	nuxtalxe	1dEX
*nuxlalnuxul	nuxlalxe	1pEX
*ditaldit	ditalxe	1dIN
*dilaldil	dilalxe	1pIN
*gotalgut	gotalxe	2d
*gulalgul	gulalxe	2p
*ixtalixit	ixtalxe	3d
*ixlalixil	ixlalxe	3p

Figure 83 Hypothesized stages 3

At a further later stage the /l/ in the 'reflexive' series is deleted before what was the 'regular' pronoun for the dual and plural forms. (Note that /l/ deletion occurs in other environments in Oksapmin as well, see Loughnane (2009).)

Oksapmin reflexive	Gloss
*nuxtanaxut	1dEX
*nuxlanuxul	1pEX
*ditadit	1dIN
*diladil	1pIN
*gutagut	2d
*gulagul	2p
*ixtaxit	3d
*ixlaixil	3p

Figure 84 Hypothesized stages 4

At a further later stage phonetic reduction in the reflexive series of what was the 'regular' pronoun takes place where this was two syllables. This gives rise to the modern dual and plural forms for the reflexive.

Oksapmin reflexive series	Gloss
nuxtanut	1dEX
nuxlanul	1pEX
ditadit	1dIN
diladil	1pIN
gutagut	2d
gulagul	2p
ixtaxit	3d
ixlaxil	3p

Figure 85 Hypothesized stages 5

In a final change which gives rise to the forms currently witnessed in Oksapmin, /x/ in the suffixes *-xol* and *-xap* has assimilated to /g/ for second person singular forms which begin with /g/ (these changes marked in bold in the table below).

Oksapmin regular series	Oksapmin reflexive series	Oksapmin 'alone' series	Gloss
nox	nonxol	nonxap	1s
nuxut	nuxtanut	nuxtalxe	1dEX
nuxul	nuxlanul	nuxlalxe	1pEX
dit	ditadit	ditalxe	1dIN
dil	diladil	dilalxe	1pIN
go	golgol	golgap	2s
gut	gutagut	gotalxe	2d
gul	gulagul	gualalxe	2p
ux	olxol	olxap	3sf
ox	ulxol	ulxap	3sm
ixit	ixtaxit	ixtalxe	3d
ixil	ixlaxil	ixlalxe	3p

Figure 86 Modern Oksapmin regular, reflexive and 'alone' pronouns