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Grammaticalization in Mountain Ok (Papua New Guinea)

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1. Introduction

After several decades of intensive research on grammaticalization and some genuine progress, our knowledge of grammaticalization channels is still skewed towards Indo-European and African languages. While the literature on Austronesian, particularly Oceanic, is catching up,¹ the languages of New Guinea, South America or Australia have not received the attention they deserve. Bisang (2011) calls for a typologically more informed approach: in order to confidently identify cross-linguistically valid channels of grammaticalization we need to look at a larger set of languages, particularly languages which differ from the well-known European mould.

This study of grammaticalization in Mountain Ok, a branch of the Ok family of Papuan languages of Papua New Guinea, consisting of Mian, Telefol, Tifal, Faiwol and Bimin, will focus on cases of grammaticalization in Mian and will supplement these with data from the other Mountain Ok languages. I will present both well-known and less familiar grammaticalization channels. Among the amply attested ones are the grammaticalization of verbs into tense or aspect meanings (Foley 2000; Lahiri 2000) or the use of the verb ‘give’ as a valence-increasing device (Newman 1996; Reesink 2013). On the other hand, there are also less expected channels. In Mian the verb *s-* ‘sleep’ grammaticalized into a hesternal past and a clause chaining construction can be identified as the source of reciprocals. Another typologically rare property is the grammaticalization of aspect markers into a marker within the reference-tracking system of Mountain Ok.

This chapter has five sections. In the introduction I give an overview of the Mountain Ok languages, their typological properties and the data sources I used. Section 2 deals with the grammaticalization of nominal categories: nominal inflectional morphology (2.1), determiners (2.2), gender (2.3), and the grammaticalization of nouns into spatial markers (2.4). Section 3 discusses verbal categories: aspect (3.1), tense (3.2), the use of ‘give’ as a valence-increasing device (3.3), predicative possession (3.4) and the Mountain Ok agreement system (3.5). Section 4 presents the unusual case of the grammaticalization of an aspect marker into a switch-reference marker. Section 5 traces the development of the Mian reciprocal from a biclausal description of the reciprocal subevents. In section 6, I summarize the well-known and little known grammaticalization channels in Mountain Ok and offer my conclusions.

1.1 The Mountain Ok languages

Within the Ok family, the main divisions are between the Mountain Ok, Lowland Ok, Western Ok, Central Ok and Ngalum branches. The Ok languages belong to the larger Trans New Guinea (TNG) family (Healey 1964a; Wurm 1982; Pawley 2005; Ross 2005). Oksapmin (Loughnane 2009), previously treated as an isolate within Trans New Guinea, has been shown to form a subgroup with Ok within TNG (Loughnane & Fedden 2011). For a map of the Mountain Ok area, see Figure 1.

1. See for example the works of Lichtenberk (1991), Bowden (1992), Palmer (2002), Ross (2004a, 2004b) and Donohue (2008).

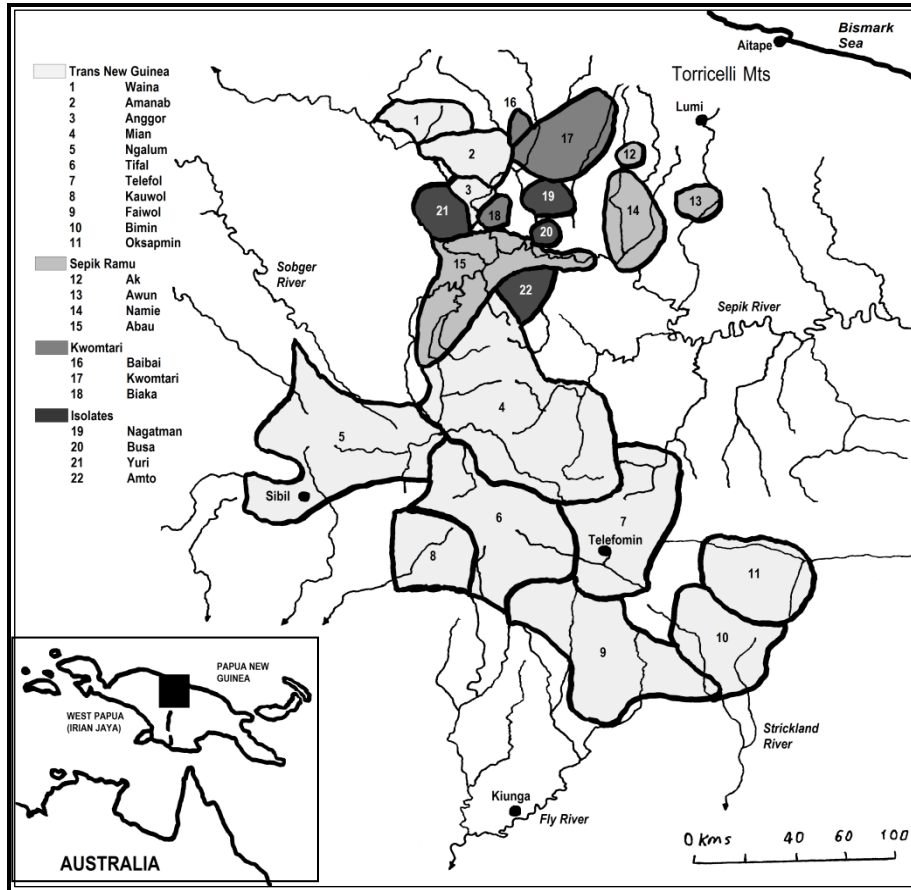


Figure 1. The Mountain Ok languages (plus Ngalum, Oksapmin and nearby non-TNG; Kauwol [nr. 8] is a variety of Faiwol)

The Mountain Ok languages are spoken in Telefomin District of Sandaun Province in Papua New Guinea. The languages featured here are given in Table 1, together with speaker numbers, ISO 396-3 and Glottolog codes.²

Table 1. The Mountain Ok languages

	Speaker numbers (source) ³	ISO 396-3 code	Glottolog code
Mian	1,750 (2000 census)	mpt	mian1256
Telefol	5,400 (1994 SIL)	tlf	tele1256
Tifal	3,600 (2003 SIL)	tif	tifa1245
Faiwol	4,500 (1987 SIL)	fai	faiw1243
Bimin	2,250 (2003 SIL)	bhl	bimi1240

I will concentrate on grammaticalization in Mian, but will supplement the data with evidence from the other Mountain Ok languages, where possible. The Mian data are my own, collected by me during original fieldwork. For the other four languages, Telefol, Tifal, Faiwol and Bimin, I used published materials (see section 1.3 below). If in the course of this paper a particular grammaticalization channel is only listed for a subset of the languages this does not necessarily mean that it does not exist in the

2. For the Glottolog classification, see Hammarström, Forkel & Haspelmath (2017; www.glottolog.org).

3. As provided in Simons & Fennig (2017; www.ethnologue.com).

other languages. Rather, it means that a particular channel is not in evidence in the data sources for the other languages. If a particular channel is listed as not applying to Mian it does not exist in Mian.

1.2 A typological profile of the Mountain Ok languages

The Mountain Ok languages have a relatively small segmental phoneme inventory though of fairly typical shape and size by Papuan standards. There are 15 consonants and five or (in the case Mian) six vowels. Telefol has phonemically long vowels (Healey 1964b); this is less clear for the other languages. All Mountain Ok languages have lexical tone.

The Mountain Ok languages are mainly suffixal. Prefixation is only found in the subset of transitive verbs that index their objects. There is hardly any nominal inflectional morphology. All Mountain Ok languages have gender. Agreement targets are all pronouns, the articles and the verb. The rightmost position in the noun phrase is reserved for a determiner. The Mountain Ok languages typically have postpositions. Aspect is central to the verb system. A sizeable number of verbs show an aspectual distinction with formally distinct perfective and imperfective stems. Verbs are further inflected for various tense, aspect and mood categories.

The languages are head-marking at clause level. Core arguments are subject (S) in intransitive clauses, subject (A) and object (O) in monotransitive clauses, and subject (A), object (O) and recipient (R) in ditransitive clauses. There is no morphological case or adpositional marking for these. Core arguments are typically indexed on the verb. Mountain Ok transitive verbs show sporadic agreement: only a subset of transitive verbs agree with their object (O).

Chaining constructions are a pervasive feature of discourse. Serial verb and clause chaining constructions are highly frequent. In a serial verb construction, one (or more than one) verb stem is followed by a fully inflected verb. All verbs in a serial verb construction share the same subject, but can have separate objects. In terms of feature scope, all verbs share the values of tense, mood, polarity and illocutionary force, but can each have their own aspect value. In a clause chaining construction, verbs can be medial and function as the predicate of a medial clause or final and function as the predicate of the last clause in a clause chain. Final verbs have the same morphology as verbs in independent sentences. Medial verbs show reference-tracking morphology indicating whether the subject of the succeeding clause is the same (conjoint reference) or different (disjoint or switch reference). Unmarked constituent order in the Mountain Ok clause is SV in intransitive clauses and AOV in transitive clauses.

1.3 Data sources

Important sources for Mountain Ok are Alan Healey's pioneering comparative study of the family (Healey 1964a) and the more recent study on the historical relationship between Oksapmin and the Ok languages (Loughnane & Fedden 2011). We have only one reference grammar of a Mountain Ok language, namely Mian (Fedden 2011). There is a series of articles and book chapters on Telefol, which taken together convey a relatively complete picture of the grammar of the language. The situation for the other Mountain Ok languages, i.e. Bimin, Tifal, and Faiwol, is more sketchy. In each case only certain aspects of the grammar have been covered, and none of them in depth.

Sources for Mian are Fedden (2011) and the Mian corpus (Fedden, Mian corpus). For Telefol, the data sources are A. Healey (1964b); P. Healey (1965a, 1965b, 1965c, 1966) and Healey & Healey (1977). Sources for Tifal are Steinkraus (1963, 1969), Healey & Steinkraus (1972), Boush & Boush (1974), and Boush (1975). Sources for Faiwol are Mecklenburg (1974) and Mecklenburg & Mecklenburg (1977). The source for Bimin is Weber (1997). Although all Mountain Ok languages are

tonal (Healey 1964a: 61) information on tone is consistently lacking in the descriptions of Tifal, Faiwol and Bimin. For these three languages, forms are therefore given here without tonal specifications.

2. Nominal categories

The categories of the noun and the noun phrase discussed here are (the almost complete absence of) nominal inflectional morphology (2.1), the development of articles and personal pronouns from demonstratives (2.2), gender (2.3), and the grammaticalization of nouns into spatial markers (2.4).

2.1 Nominal inflectional morphology

Noun morphology in Mountain Ok is restricted to one plural suffix, which is used for kin nouns (e.g. Mian *biēm* ‘mum’ vs. *biēm-wal* ‘mothers’), dyadic kin terms (e.g. Mian *hat* ‘mother and child’ vs. *hat-wal* ‘mother and children’) and a very small subset of common nouns, typically names of offices (e.g. Mian *kiab* ‘kiap, patrol officer’ vs. *kiab-wal* ‘kiaps, patrol officers’). The forms are Mian *-wal*, Telefol *-al*, Tifal *-al* and Bimin *-el*. There is no information on Faiwol. Loughnane & Fedden (2011: 28) reconstruct this suffix as **-Vl* for proto Mountain Ok. It is possible that the suffix has a lexical source, but since it reconstructs as a suffix in proto Mountain Ok its grammaticalization must have occurred before pre-Mountain Ok times.⁴ All Mountain Ok languages have lexical reduplications, e.g. Mian *kimkim* ‘root’, Telefol *timtim* ‘root’, Tifal *timtim* ‘root’. These do not productively express plural. They are historical and the languages synchronically lack non-reduplicated stems with a similar meaning.

2.2 Determiners

The Mountain Ok languages have articles that indicate specificity or definiteness, depending on the language. The articles are formally very similar to the personal pronouns, which is a common situation. I will suggest that both the articles and the pronouns have developed from a set of old demonstratives (2.2.1). For Tifal, Mian and Telefol we have reliable data on the current proximal and distal series of demonstratives, which presumably have been formed in pre-Mountain Ok times by combining a pronominal element with a deictic element (2.2.2). All determiners also encode number (singular vs. plural) and gender (masculine vs. feminine, plus two neuters, at least in Mian, see section 2.3).

2.2.1 Articles

Specific Mian noun phrases are followed by an enclitic article. These articles also indicate the number of the noun phrase and, in the singular, the gender of the head noun. The articles are clearly related to the third person forms of the free pronouns, with which they are segmentally identical, but articles are more strongly grammaticalized: they have undergone erosion, becoming toneless clitics (Fedden 2011:

4. These forms also appear in the known cognates for ‘bow string’: Mian *án-wal*, Telefol *un-al*, Tifal *un-al*, whereby the first root is always ‘arrow’ or ‘bow and arrow’. In the absence of any plausible semantic relationship I treat these correspondences as accidental. I would like to thank Edgar Suter and Don Gardner for discussion of this point.

66–68). The forms of the Mian article together with the forms of the personal pronouns are given in Table 2. The patterns of syncretism will be further discussed in section 2.3 on gender.

Table 2. Mian clitic articles (personal pronouns in brackets)

	SINGULAR	PLURAL
MASCULINE	= <i>e</i> (<i>é</i>)	= <i>i</i> (<i>í</i>)
FEMININE	= <i>o</i> (<i>ó</i>)	
NEUTER 1	= <i>e</i> (<i>é</i>)	= <i>o</i> (<i>ó</i>)
NEUTER 2	= <i>o</i> (<i>ó</i>)	

Consider example (1) where three nouns – each with an article – appear as subject, object, and possessor (of the object):

- (1) Mian
nakamîn=e imen=o eíl=e wen-ha-b-e=a
 man=SG.M taro=PL.N1 pig=SG.M eat.IPFV-3SG.M.R-DS.SIM-3SG.M.SBJ=MED
 ‘While a pig was eating a man’s taro, the man...’ [Pig story]

The noun phrase without the article occurs in contexts in which it is used non-specifically, that is in any of the following contexts given in (2):

- (2) a. in the citation form, e.g. *nakamîn* ‘man’, *eíl* ‘pig’, *imen* ‘taro’, *sök* ‘rain’, *kukub* ‘custom’
 b. in generic objects in the citation form of (some) transitive verbs, e.g. *as hakalin* [wood chop.IPFV.VN] ‘(activity of) chopping wood’
 c. in first elements in N-N compounds, e.g. *wan-am* [bird-house] ‘bird blind’
 d. in generic terms used to classify animals and plants, e.g. *wan* ‘bird’ in *wan tolim* [bird eagle] ‘New Guinea eagle (sc. *Harpyopsis novaeguineae*)’
 e. under negation, e.g. *imen bl-im* [taro exist-NEG] ‘there’s no taro’, *yái=ba=be* [wound=NEG=DECL] ‘it’s not a wound’.

We find evidence that the article is on the way to becoming a gender marker through the extension of the form with the article to non-specific contexts. Although the form without article is the preferred choice under negation one also finds the articulated form with the same meaning. Greenberg (1978) shows that across languages the definite article often develops into a gender marker after going through a grammaticalization process during which it is increasingly used both as a definite article, meaning ‘the N’, and an indefinite specific article, meaning ‘a specific N’ or ‘a certain N’. When the use of the article becomes a function of the syntactic construction in which the noun appears (e.g. negation), the original contrast between the form with the article and the form without article is lost and the distinction becomes redundant. At this point the form with the article usually starts to spread to all contexts. If this form becomes ubiquitous in the language, the former article has developed into an (overt) gender marker on the noun (Greenberg 1978: 63).

The other Mountain Ok languages also have articles which resemble the pronouns.⁵ Examples in (3):

5. The degree of erosion of articles in the other Mountain Ok languages is hard to ascertain. In all sources, they are always written as separate words, which suggests that they are treated as clitics or independent words, rather than affixes. For Telefol, they are always written as having high tone. Since tonal information is consistently

- (3) a. Telefol
tanúm íyó
 man 3SG.M
 ‘the man’
- b. Tifal
tunum ayo
 man 3SG.M
 ‘the man’
- c. Faiwol
man iyo
 child 3PL
 ‘the children’
- d. Bimin
waneng u
 woman 3SG.F
 ‘the woman’

Articles indicate number and gender, and also specificity. For Tifal the forms are actually analyzed as definite and consistently translated with ‘the’ in English (Boush 1975: 7). For Mian, Telefol and Tifal we know that there is a general tendency to omit articles with inanimate nouns (cf. Fedden 2011: 111; Healey 1964a: 63; Boush 1979: 53). It seems that the use of the article is implicated in an animate-inanimate distinction.

Articles in Mountain Ok resemble the pronouns. The forms of the pronoun roots are given in Table 3. Reconstructions for proto Mountain Ok (MOk) and proto Ok are included (Healey 1964a; Usher 2014). Bound pronoun roots are indicated by ‘-’.

Table 3. Mountain Ok third person pronouns (based on Healey 1964a)

		Mian	Telefol	Tifal	Faiwol	Bimin	proto MOk	proto Ok	
3	SG	M	é	í- ~ yá- ^a	a-	a-	e	*e	*e
		F	ó	ú- ~ ó- ^b	u-	u-	u	*u	*u
	PL	í	í-	i-	i-	i	*i	*i	

^a yá- is a variant with certain suffixes (Healey 1965: 31)

^b ó- is an assimilated form before certain suffixes

The forms in Telefol, Tifal and Faiwol are bound roots and require an additional suffix *-o* (*-yo* after vowels). Certain pronouns in Mian and Bimin also require this suffix, for example the Mian personal pronoun *kéb-* ‘2SG.M’ can only surface with a suffix, e.g. *kéb-o*. However, in Mian and Bimin the third person singular pronouns are free, rather than bound roots. The pronoun roots are cognate across Mountain Ok (Healey 1964a).

The fact that the Mountain Ok articles look like the personal pronouns does not necessarily mean that the article is historically derived from the personal pronoun. Given their phonetic erosion the Mian articles are the most strongly grammaticalized forms, but it is possible that at an earlier stage, i.e. in pre-Ok or pOk times, the gendered pronominal elements (*e, *u and *i, cf. Table 3 above) were in fact demonstratives and that both personal pronouns and determiners are reflexes of these archaic demonstratives. This view is supported by the fact that Usher and Suter (2015: 117–118) reconstruct the cognate forms as demonstratives for proto Anim, a distantly related language family. In Ok these would have become personal pronouns and determiners, which is a typologically well-established development (Greenberg 1978; Himmelmann 1997; Diessel 1999).⁶

lacking in the sources on Tifal, Faiwol and Bimin, the absence of tonal specification does not allow us to conclude that articles in these three languages have undergone any phonetic reduction.

6. This would be similar to what we know from Romance. For example, the Spanish pronoun *él* ‘he’ and definite article *el* are both reflexes of the Latin demonstrative *ille*. (The present-day Spanish demonstrative *éste* ‘this (M)’ comes from a different Latin demonstrative *iste*.) I thank Matthew Baerman for discussion of this point.

(4) *Mountain Ok*

demonstrative > PERSONAL PRONOUN and ARTICLE

The development of pronouns and articles from demonstratives is a well-known process (Heine & Kuteva 2002: 109–111, 112–113). Once the old demonstratives got bleached and ended up as pronouns, presumably in pre-Mountain Ok times, the languages were in need of a new set of demonstratives, which were formed by reinforcing the old demonstrative with a deictic element; again a well-known process typologically. I will now sketch the development of the contemporary Mountain Ok demonstratives.

2.2.2 *Demonstratives*

While the Mountain Ok languages show a relatively homogenous picture in their personal pronoun forms there is more variation in the demonstratives. Historically, the current demonstratives were presumably formed by reinforcing the old demonstratives with an additional deictic element. Synchronically, the forms are not analyzable in this fashion anymore.

The analysis of Mountain Ok demonstratives is hampered by the fact that we have reliable data only for three languages: Tifal, Telefol and Mian. For Bimin, only a series of definite articles has been identified (Weber 1997: 47), which *prima facie* look like forms parallel to the Telefol distal demonstratives (see below). For Faiwol, Mecklenburg & Mecklenburg (1977) do not mention a separate series of demonstratives.⁷

The forms of the proximal and distal demonstrative roots in Tifal, Telefol, and Mian are set out in Tables 4 and 5. Both sets can be used pronominally and adnominally, e.g. Telefol *beéyó* [DEM.DIST.SG.M] ‘that’ and *tanum beéyó* [man DEM.DIST.SG.M] ‘that man’. Note that the Telefol forms do not make a number distinction, a point I will take up briefly below. The Telefol and Tifal forms are bound roots which have to take a suffix; the Mian forms are free roots, i.e. they can occur independently or take a suffix.

Table 4. Proximal demonstrative roots across Mountain Ok (‘this’)

Person	Number	Gender	Tifal	Mian	Telefol
3	SG	M	kalaa-	élé	keé-
		F	kuluu-	óló	koó-
	PL	M	kalii-	éí	keé-
		F			koó-

Table 5. Distal demonstrative roots across Mountain Ok (‘that’)

Person	Number	Gender	Tifal	Mian	Telefol
3	SG	M	kaa-	yé	beé-
		F	kuu-	yó	boó-
	PL	M	kii-	yéí	beé-
		F			boó-

In the following I will sketch the presumed diachronic development of the demonstratives. The forms given will be approximations; particularly vowel length and quality will be finessed. The

7. There is a form *bela* ‘this’ in Mecklenburg (1974), which appears once in the phrase *bela kinim dukum* [this man big] ‘this bigman’ (Mecklenburg 1974: 164). This is too little information to say much about this form.

proximal demonstratives in the three languages share a cognate part. Mian loses initial /k/ conditioned by the quality of the following vowel, where Telefol and Tifal keep it (Loughnane & Fedden 2011: 16; Timothy Usher, p.c.) and there is a sound correspondence Mian /ɛ/ : Tifal /a/ : Telefol /a/ and Mian /o/ : Tifal /u/ : Telefol /u/. This would make *kV ‘here’ a possible etymon of the proximal element. Note that the Tifal and Mian forms involve an additional element -IV. Likely reflexes of *kV are: *ka* in the Tifal word *kawu* ‘here’, Mian *é-* ‘here’ and Telefol *ka* ‘here’. At some point the deictic element would have been collocated with the gendered pronominal elements *e, *u and *i, following the pattern [here+3SG.M] to yield a new series of proximal demonstratives, i.e. *kV(-IV)-e, *kV(-IV)-u, *kV(-IV)-i.

The feminine forms are characterized by ablaut, e.g. Tifal *kuluu-* and Mian *óló*. As Telefol monophthongizes all vowel sequences (Healey 1964b: 2), whatever the exact vowel sequence was the result in Telefol would have been a long like vowel. The masculine singular and plural forms would have collapsed due to phonologically regular convergence and then the singular feminine was extended to the plural by analogy (Timothy Usher, p.c.).

Now we turn to the distal forms, which are more heterogenous. The first thing to note is that the Tifal distal forms are actually cognate with the Telefol proximal forms. For Mian the distal forms are historically collocations of a distal deictic element *yV and the gendered pronominal elements *e, *u and *i, following the pattern [there+3SG.M] to yield a new series of distal demonstratives i.e. *yV-e, *yV-o, and *yV-i. The relation of the distal deictic element *yV to the present-day Mian word *yé* ‘there’ is obvious. It is very likely that the Mian forms are old. The evidence for this is that the personal pronouns *ye ‘he’, *yu ‘she’, and *yi ‘they’ can be reconstructed for Lowland Ok (Healey 1964a: 67; Usher 2014). These seem to be cognate with the Mian distal demonstratives, but have developed into personal pronouns in LOk, replacing the old Ok pronouns *e, *u, and *i. The Telefol forms probably involve a different element *ba-* (< *mbV). For Bimin, Weber (1997) does not mention a separate series of demonstratives but analyzes the language as having a set of definite articles consisting of /b-/ followed by the third person pronoun (Weber 1997: 47), thus *be* ‘DEF.SG.M’, *bu* ‘DEF.SG.F’, *bi* ‘DEF.PL’, e.g. *kunum be* [man DEF.SG.M] ‘the man’; *waneng atite bu* [woman beautiful DEF.SG.F] ‘the beautiful woman’; *kunum bi* [man DEF.PL] ‘the men’. We can also find these forms in Tifal: *bee* /be:/ ‘that person (male), that thing’, *buu* /bu:/ ‘that person (female), that thing’ (Healey and Steinkraus 1972: 140). It is likely that these are the same /b-/ elements that appear in the Telefol distal demonstratives.

2.3 Gender

All Mountain Ok languages have grammatical gender. Gender systems are not typical of Trans New Guinea languages (Wurm 1982: 80; Wälchli 2018). Gender in Mountain Ok is an old phenomenon. The gendered pronouns in the second and third person singular go back to proto Ok times: *kep ‘you (M)’ vs. *kup ‘you (F)’; *e ‘he’ vs. *u ‘she’ (Usher 2014). For more details on pronominal forms, see section 3.5 on agreement. The rest of this section briefly describes the gender systems of the present-day Mountain Ok languages.

Agreement targets are pronouns, including demonstratives, articles and verbs. Telefol, Tifal, Faiwol and Bimin are analyzed as having two genders, masculine and feminine. In Telefol, humans and higher animals are assigned gender according to biological sex, males are masculine and females feminine, whereas lower animals and inanimates are assigned gender according to size (small > masculine, large > feminine), with the possibility of flexible gender for nouns that commonly have large or small referents, as in (5). We have no information about gender assignment in Tifal, Faiwol or Bimin.

- (5) Telefol
 a. *tuím iyó*

stone 3SG.M
‘the (small) stone, pebble’

- b. *tuím úyó*
stone 3SG.F
‘the (large) stone, rock’

Mian has a more complex gender system in which assignment for humans and higher animals is the same as in the other Mountain Ok languages. Other animals have a conventionalized gender, either masculine or feminine, but without size being a predictor of assignment, and inanimates are assigned one of two inanimate genders. Table 5 gives the forms of the third person pronoun.

Table 5. Forms of the Mian third person pronouns

	SINGULAR	PLURAL
MASCULINE	<i>é</i>	<i>í</i>
FEMININE	<i>ó</i>	
NEUTER 1	<i>é</i>	<i>ó</i>
NEUTER 2	<i>ó</i>	

Mian has four controller genders, i.e. genders defined by the agreements required by the controller. The forms show an interesting pattern of syncretism: all Mian genders are nonautonomous values (Zaliznjak 1973[2002]: 69–74), which means that they have no agreement forms which are unique to them. Consequently, the number of gender distinctions that can be found on targets, i.e. the number of target genders, is smaller, namely two: =*e* and =*o* in the singular, and =*i* and =*o* in the plural. An alternative way of looking at the Mian gender system would be to say that there is a masculine-feminine distinction in the singular and an animate-inanimate distinction in the plural. For a detailed description of the Mian gender system, see Fedden (2007), Fedden (2011: ch. 4), Corbett & Fedden (2016), Corbett, Fedden & Finkel (in press). There is not enough information about the agreement patterns of plural inanimates in the other Mountain Ok languages to exclude the possibility that the gender system found in Mian, in which animates pattern differently from inanimates, is actually more widespread in Mountain Ok.

2.4 Spatial and temporal markers

All Mountain Ok languages have grammaticalized the noun for ‘interior, hole’, Mian *tem*, into a spatial marker meaning IN and they grammaticalized the noun for ‘top (surface)’, Mian *dim*, into a spatial marker meaning ON. For Mian *tem*, there is a homophonous nominal form with the meaning ‘interior, hole’, cf. *amún-tem* [belly-hole] ‘abdominal cavity’ rather than *‘in(to) the belly’. Mian *dim* is attested in the compound *amgolim* [*am-go-dim* house-head-top] ‘roof’, rather than *‘on(to) the roof’.

The spatial marker ON has also been extended to temporal contexts in the following interrogative collocations: Mian *fâtnamin dim*, Tifal *kanimin diim*, both [what ON] ‘when’, and in temporal adverbials, e.g. Mian *fraide dim* [Friday ON] ‘on Friday’. A further grammaticalization of the noun for ‘top (surface)’, e.g. Mian *dim*, into a marker of predicative possession is discussed in section 3.4 below.

These are the only two simple postpositions for which there is a clear noun origin. At least Mian has a set of some 14 complex postpositions which consist of a noun (often a body-part noun) and a locative suffix *-daa*, which itself is potentially a grammaticalization from the verb *daa* ‘abide’, e.g. *ase*

ablan-daa [tree.the underside-at] ‘at the underside of the tree’. For more examples, see Fedden 2011: 240–242).

- (6) *Mountain Ok*
 interior, hole > IN
 top (surface) > ON (SPATIAL) > ON (TEMPORAL)

The development of relational nouns (including nouns referring to body parts) into spatial or temporal grammatical markers is a common grammaticalization channel (Heine & Kuteva 2002: 182, 299–300).

3. Verbal categories

In this section I discuss the grammaticalization of the categories aspect (3.1) and tense (3.2). Then I turn to the use of the verb ‘give’ as a valence-increasing device for the introduction of an additional argument with dative-like semantics (3.3), which is also used in predicative possession (3.4). Finally, I present the Mountain Ok agreement system (3.5). Since modal categories are expressed by affixes whose etymologies are obscure I will not say more about them here.

3.1 Aspect

Aspect is a central grammatical category in all Mountain Ok languages. The Mountain Ok languages allow us to observe several different stages of a grammaticalization cycle. At the outermost layer there are constructions in which the verbs that contribute the aspectual meaning are still a phonologically independent word. Mian uses the verb *be*, which means ‘move’ as a lexical verb (7), with a persistive meaning ‘keep V-ing’ (8).

- (7) Mian
inǎb=e *yé* *be-b-e=be*
 snake=SG.M there move-IPFV-3SG.M.SBJ=DECL
 ‘A snake is moving there.’

- (8) Mian
yé *genam* *be-b-i=be*
 there roll.IPFV PERSISTIVE-IPFV-1SG.SBJ=DECL
 ‘I keep rolling (a cigarette).’

Other verbs which are used with an aspectual function in a serial verb construction are *deibô* ‘leave’ in Mian with a completive meaning, and *une* ‘go’ in Tifal with a habitual meaning (Boush 1979: 2).

Many TNG languages (and Papuan languages more widely) express aspect distinctions by means of serial verb constructions with verbs like ‘hold’, ‘take’ or ‘hit’ for perfective aspect and ‘stay’, ‘stand’,

‘lie’, or ‘do’ for continuous aspect (Foley 1986: 145). Consider example (9) from the Madang language Kalam (Pawley 1993; 2008), where the verb *md-* ‘stay’ expresses a persisting state of affairs.⁸

(9) Kalam

b yob ag md-p-ay
 man big sound stay-PRS-3PL
 ‘The big men are still talking/continue to talk.’

The high incidence of serial verb constructions in the expression of aspect is related to the high frequency of this construction type in Papuan languages in general (Foley 1986: 143). Other TNG languages in which serial verb constructions play a role in aspect marking are Enga (Lang 1975), Fore (Scott 1978) and Dani (Bromley 1981). Outside of TNG this is the case for example in Iatmul (Sepik; Staalsen 1972) and Vanimo (Skou; Ross 1980).

Returning to Mountain Ok, at the next layer further inward we find a continuous suffix *-bi* which grammaticalized from the existential verb ‘exist, stay, remain’, whose forms are: Mian *bi*, Telefol *bi*, Tifal *bV*, Faiwol *bi*, and Bimin *b* and which can be reconstructed as **bi* for proto Mountain Ok. This development has happened in all Mountain Ok languages except Bimin. Compare examples (10) and (11).

(10) Mian

é yé bi-s-e=be
 3SG.M there exist-RPST-3SG.M.SBJ=DECL
 ‘He was there.’

(11) Mian

é yé fu-bi-s-e=be
 3SG.M there cook-CONT-RPST-3SG.M.SBJ=DECL
 ‘He was cooking there.’

The oldest layer is a highly irregular set of markers of a perfective-imperfective contrast. A large number of verbs take part in this system of aspect marking, e.g. 71% of verbs in Mian (Fedden 2015). While the continuous suffix *-bi* (cf. 12 above) combines with a wide range of verbs the suffixes currently under discussion differ depending on the verb. None of the subtypes contain more than a dozen verbs, some subtypes only have one or two verbs. For some verbs the aspectual distinction is signalled by apophony or (near-)suppletion. Examples from Mian are given in Table 6. Suprasegmental changes in the form of tone changes do occur but they are never the sole exponent of aspect.

8. In Southern New Guinea such serial verb constructions are rare in the expression of aspect. Instead a combination of alternate verb stems and specialized aspectual inflections are used (Drabbe 1955; Siegel 2014; Evans 2015; Döhler 2016).

Table 6. Stem aspect in Mian

Process	PERFECTIVE	IMPERFECTIVE	Gloss
suffixation	<i>fa</i>	<i>fa-ka</i>	‘make fire’
	<i>ge</i>	<i>ge-n</i>	‘build’
	<i>un</i>	<i>un-ê</i>	‘go’
	<i>dei-lâ’</i>	<i>dei</i>	‘remove hair’
	<i>nge-la</i>	<i>nge-n</i>	‘beg’
	<i>halbu-a</i>	<i>halbû’</i>	‘fold’
	<i>uli-lò</i>	<i>uli</i>	‘roll thread’
	<i>me-le</i>	<i>me-n</i>	‘touch’
apophony	<i>ifa</i>	<i>ifu</i>	‘serve food’
	<i>ge</i>	<i>ga</i>	‘say’
(near-)suppletion	<i>dowôn’</i>	<i>wen</i>	‘eat’
	<i>baa</i>	<i>o</i>	‘say’

Every language also has a subset of biaspectual verbs for which one and the same form can have a perfective or an imperfective meaning. In Mian, a substantial majority of verbs, i.e. 132 out of 456 verbs (or 29%), are biaspectual (Fedden 2015).

Examples from Telefol of the use of suffixation, apophony and suppletion in aspect marking are given in Table 7 (Healey 1964a: 68).

Table 7. Stem aspect in Telefol

Process	PERFECTIVE	IMPERFECTIVE	Gloss
Suffixation	<i>daá</i>	<i>daá-ka</i>	‘put’
	<i>un</i>	<i>ún-e</i>	‘go’
Apophony	<i>bóko</i>	<i>báka</i>	‘say’
	<i>ífo</i>	<i>ífú</i>	‘serve food’
Suppletion	<i>undú</i>	<i>wee</i>	‘prepare’

Given the layers of grammaticalization in the Mountain Ok aspect system it is plausible to assume that the innermost aspect markers are etymologically verbs which have grammaticalized into suffixes. These verbs would originally have been used in a serial verb construction consisting of a lexical verb followed by a functional verb expressing aspect. This sequence would then have undergone desemanticization and coalescence, resulting in a single verb with an aspect suffix. Erstwhile verbal etyma are hardly recognizable anymore. For at least one Mian suffix a potential verbal origin is still apparent: *-lo* marking perfective aspect, which presumably comes from the extant verb *-lô* ‘hit’.⁹

There is a tendency for certain aspect categories to be expressed either periphrastically or inflectionally (Dahl 1985). For instance, a periphrastic construction is typically used for the progressive, whereas perfectives and imperfectives are typically expressed with a bound form. This form-meaning correlation is related to the degree of grammaticalization. A gradual generalization of meaning is paralleled by a gradual reduction in form and fusion with the verb (Bybee & Dahl 1989: 56). Progressives, completives and habituales as less general meanings show less grammaticalization of form, whereas perfective and imperfective are more abstract meanings and hence show a stronger degree of

9. This is a transitive verb which indexes its object with a prefix (see section 3.5 below). I assume that undergoing coalescence with the lexical verb it lost this prefix. The loss of the prefix is amply attested in Mian verb-verb compounds in which the second verb on its own would index its object with a prefix.

grammaticalization of form. Furthermore, the perfective-imperfective distinction is typically expressed by more complex means than are found in other areas of morphology, including other areas of the tense-aspect system of a language (Dahl 2000: 16). The degree of lexical idiosyncrasy is high and it is often not predictable from one verb to another how the opposition is realized. This is exactly the situation we find in Mountain Ok, as far as the perfective-imperfective contrast is concerned.

(12) *Mountain Ok*

exist > CONTINUOUS (except Bimin)

verb (in a serial verb construction) > PERFECTIVE, IMPERFECTIVE

(13) *Mian*

move > PERSISTIVE

leave > COMPLETIVE

hit > PERFECTIVE

(14) *Tifal*

go > HABITUAL

Grammaticalization processes where verbs acquire an aspectual meaning are by and large well-known and are mentioned in Heine & Kuteva (2002) in many places. More specifically, for the development of ‘exist’ > CONT see Heine & Kuteva (2002: 127), for ‘leave’ > COMPL see (Heine & Kuteva 2002: 189–190), and for ‘go’ > HAB see Heine & Kuteva (2002: 159). The grammaticalization of ‘hit’ onto markers of perfectivity is not explicitly stated in Heine & Kuteva (2002), but is well-known from Papuan languages (Foley 1986: 145). The only lesser-known channel is the development of a very general ‘move’-verb (other than ‘go’) into a marker of persistence.

3.2 Tense

The Mountain Ok languages have a number of suffixally marked tense categories, all with obscure etymologies. Mian shows interesting, more recent developments in its tense system which cannot be found in the other languages. There are two additional tense categories which are both marked with a suffix in a slot after the subject index. These are *-bio* ‘General past’ and *-so* ‘Hesternal past’. An example of each is given in (15) and (16), respectively.

(15) Mian

fu-n-eb-bio=be

cook-REAL-2SG.SBJ-GPST=DECL

‘you cooked’

(16) Mian

(*sintalo*) *fu-n-eb-so=be*

(yesterday) cook-REAL-2SG.SBJ-HPST=DECL

‘you cooked yesterday’

The construction from which the general past suffix *-bio* grammaticalized probably consisted of a fully inflected lexical verb in a serialization with the existential verb *bi*, whose function was to signal a time interval between the event and the moment of speaking. The existential verb would have been

inflected with a 3SG.F subject suffix *-o*, which is here used to indicate an impersonal subject. This is illustrated in the hypothetical (hence starred) Mian example in (17).

- (17) Mian
 **fu-n-eb* *bi-o*
 cook-REAL-2SG.SBJ exist-3SG.F.SBJ
 ‘you cooked and then there was staying’

Over time this construction would have undergone coalescence and the morphologically complex verb *bi-o* would have been reanalyzed as a tense suffix *-bio*, locating the event in the past.

The second tense category which Mian innovated essentially in the same way is the hesternal past marker *-so* (see (16) above. Here the underlying construction seems to be a serialization with the verb *s* ‘sleep’ (Fedden 2011: 453) with a similar impersonal inflection, illustrated in the hypothetical (starred) example (18):

- (18) Mian
 **fu-n-eb* *s-o*
 cook-REAL-2SG.SBJ sleep-3SG.F.SBJ
 ‘you cooked and then there was sleeping’

Again, this construction would have undergone coalescence and the morphologically complex verb *s-o* would have been reanalyzed as a tense suffix *-so* for an event that took place yesterday (or the day before yesterday).

- (19) *Mian*
 exist + impersonal inflection > GENERAL PAST
 sleep + impersonal inflection > HESTERNAL PAST

The verb *s* ‘sleep’ is a plausible etymon for a hesternal past. While this is not a common grammaticalization channel, and it goes unmentioned in Heine & Kuteva (2002) it has been found in at least two Bantu languages (Fyam and Kgalagadi); see Dahl (2013: 43–44) and references there. The development of ‘yesterday’ into a past marker, however, is mentioned in Heine & Kuteva (2002: 315–316), but it occurs infrequently and is restricted to Africa.¹⁰

3.3 Verb ‘give’ as a valence-increasing device

The use of the verb ‘give’ as a valence-increasing device is widespread in TNG languages (Foley 1986, 2000; Reesink 2013). Mian, Telefol and Tifal use their ‘give’ verbs *-ûb’-*, *-ub-* and *-ub-*, respectively, to add an argument onto which a range of peripheral semantic roles can be mapped, such as recipient, benefactive, malefactive, and goal of ballistic motion. Bimin and Faiwol diverge from the other

10. Given that the Mian word for ‘yesterday’ is *sintalo* I cannot exclude that the hesternal past is actually a development from this adverb involving some heavy phonetic erosion (*sintalo* > *-so*), rather than a development from the verb *s* ‘sleep’. The reason why I consider the latter scenario more likely is that it would make the developments of the general past *-bio* and the hesternal past *-so* parallel. Both suffixes would go back to verbs, namely *bi* and *s*, respectively. There is no plausible adverbial etymon for the general past suffix *-bio*.

Mountain Ok languages in that a valence-increasing element derived from ‘give’ cannot be discerned synchronically.

Example (20) illustrate the use of ‘give’ in Mian as a lexical verb. Examples (21) and (22) shows its use as a valence increasing device, adding a benefactive argument to an intransitive and a transitive verb, respectively. I will call this the BEN-construction. The grammaticalization of ‘give’ into dative or benefactive meanings is well-known and common cross-linguistically (Newman 1996; Heine & Kuteva 2002: 149–151, 153–154). See Fedden (2010) for a detailed description of this construction in Mian.

(20) Mian

né naka=e eíl=o
 1SG man=SG.M pig=SG.F
om-ûb'-a-n-i=be
 3SG.F_CL.OBJ-give.PFV-3SG.M.R.PFV-REAL-1SG.SBJ=DECL
 ‘I gave the sow to the man.’

(21) Mian

un-ûb'-ke-n-amab-i=be
 go.PFV-BEN-2SG.R.PFV-AUX.PFV-IRR.NANPL.SBJ-1SG.SBJ=DECL
 ‘I will go for you.’

(22) Mian

imen=e fu-b'-ke-Ø-i-bio=be
 taro=SG.N1 cook-BEN-2SG.R.PFV-REAL-1SG.SBJ-GPST=DECL
 ‘I cooked a taro for you.’

Like Mian, Telefol and Tifal use this construction to introduce a further argument. This is illustrated for the Telefol verb *-kó* ‘hit’ in (23), and the Tifal verb *boko* ‘say, talk’ in (24).

(23) Telefol

beýó mán í-tá
 DEM.DIST.SG.M boy 3SG.M-FOC
ang-kó-b-nee-l-á
 3SG.M.OBJ-hit.PFV-BEN-1SG.R-PFV-3SG.M.SBJ.IMM.PST
 ‘He hit the boy for me.’
 (Healey 1965: 12, my segmentation and glosses)

(24) Tifal

boko-b-na-laam-sad-a-lee wookwookmin uyo kee-mokom-i
 talk-BEN-1SG.R-IMM-DS-3SG.M.SBJ-CONN work it do-IRR-1SG.SBJ
 ‘Immediately after he talks to me I will do his work.’
 (Boush 1979: 12, my segmentation and glosses)

In Mian, Telefol and Tifal, the BEN-construction is restricted to perfective aspect. In the imperfective the person suffix is directly appended to the verb stem (see Fedden 2010: 464, 468, and examples in Boush 1979: 17).

There are clear signs of grammaticalization in this construction. First, there is incipient phonetic erosion in BEN, which never applies to lexical ‘give’. The former is reduced to just *-b'-* after a vowel, e.g. Mian *fu-b'-ke* [cook-BEN-2SG.R] ‘cook for you’. Further, there is considerable desemanticization

and expansion from lexical ‘give’ to the semantically much more general meaning of BEN, which is not restricted to recipients.

(25) *Mountain Ok (except Faiwol and Bimin)*

give > BENEFACTIVE

While not well-known from European languages this grammaticalization channel is attested in Africa, South East Asia, Oceania, and also in some creole languages (Heine & Kuteva 2002: 149–151).

3.4 Predicative possession

Lacking a verb ‘have’, Mian uses the existential verb *bi* ‘exist, stay, remain’ as a marker of predicative possession. There are two distinct constructions. One is the BEN-construction (see section 3.3 above), in which the possessor is expressed as the (benefactive) object and the possessed is expressed as the subject (26). The other is an adverbial construction involving *dimo* ‘on’ (< *dim* ‘top (surface)’ (see section 2.4 above) for the possessor; it encodes the possessed as the subject (27).

(26) Mian

né füt=e bi-t'-ne¹¹ bi-Ø-e=be
 1SG tobacco=SG.N1 exist-BEN-1SG.R exist-IPFV-3SG.N1.SBJ=DECL
 ‘I have tobacco.’ (lit. ‘The tobacco is for me’)

(27) Mian

kéb dim=o füt=e bi=a?
 2SG.M.POSS on=ART tobacco=SG.N1 exist-IPFV.3SG.N1.SBJ=PQ
 ‘Do you have tobacco?’ (Lit. ‘Is the tobacco on you?’)

The latter example nicely illustrates that in the process of grammaticalization decategorialization can happen after desemantization and extension. This means that a word can be used in a new context with a new meaning but it can still show the morphosyntactic structures associated with its original part of speech. In (27), *dim* still carries the clitic article =*o* and the preceding pronoun is in its possessive form (*kéb* ‘your’). Although noun phrase structure is retained, the meaning is clearly not ‘(top) surface’ anymore, but rather *dim* has assumed a relational meaning here.

Whether either of these predicative possession constructions is used in any of the other Mountain Ok languages remains unclear. Given that at least Mian, Telefol and Tifal have the BEN-construction, I think it likely that parallel constructions to the one in (26) exist in these languages, but they are not in evidence in the sources.

(28) *Mian*

exist-for > POSSESSIVE
 top (surface) > ON > POSSESSIVE

According to Heine & Kuteva (2002: 105–106) an important source for possessives are datives. This type of grammaticalization is described as involving the *Goal Schema* in Heine (1997). Although the benefactive construction, which is the source of the possessive in Mian, is not a dative, it fits here

11. /b/ > [t] in (26) is a regular phonological process that applies to ‘give’ as well as to BEN.

because its meanings are cross-linguistically often found in datives, namely recipient, benefactive and goal of ballistic motion. The development of locatives into possessives, i.e. the second channel that Mian has for the grammaticalization of possessives, is typologically common (Heine & Kuteva 2002: 205).

3.5 Agreement

The bound agreements on the Mountain Ok verb are most likely pronominal in origin and were incorporated into the verb in pre-Mountain Ok times. I will highlight plausible etymologies given the present-day forms, but I am aware that the data does not demonstrate the shift from free pronouns to bound (agreement) forms.

3.5.1 Pronouns and person affixes in Mian

All finite verbs in Mian agree with their subject by means of a suffix. Table 8 sets out the forms of the personal pronoun roots and the subject suffixes.

Table 8. Mian pronoun roots and subject suffixes

Person	Number	Gender	Clusivity	Pronoun root	Subject suffix
1	SG			né	-i
2		M		kéb-	-eb
		F		ób-	
3		M		é	-e
	F		ó	-o	
1	PL		EXCL	ní	-ob
			INCL	níb-	
2				íb-	-ib
3			í		

In contrast to the pronoun roots, which are all high-toned, subject suffixes – having undergone phonetic erosion – are toneless. In the suffixes, the gender contrast is neutralized in the second person singular, so is the clusivity distinction in the first person plural. The etymological relations are rather obvious for the second person singular, the third person singular, and the second person plural. It seems that the second person plural form was extended to mean third person plural as well, creating syncretism for all verbs. Cross-linguistically, this pattern of syncretism is common (Baerman, Brown & Corbett 2005: 59), and it is particularly frequent in TNG. There is no obvious relation between the subject suffixes and the pronoun roots of the first person forms.

Mian has a small subset of transitive verbs which agree with the object by means of a prefix. Again, for most forms the relation to the free pronouns is rather clear. Table 9 compares the forms of the pronoun roots with the object prefixes.

Table 9. Mian pronoun roots and object prefixes

Person	Number	Gender	Clusivity	Pronoun root	Object prefix
1	SG			né	na-
2		M		kéɓ-	ka-
		F		ób-	
3		M		é	a-
		F		ó	wa-
1	PL		EXCL	ní	i- ~ y(a)-
			INCL	níɓ-	
2				íɓ-	
3				í	

Like subject suffixes, object prefixes are toneless and have no gender contrast in the second person singular. The relations are clear for the first and second persons in the singular; a plausible source for the plural object prefix *i- ~ y(a)-* is the third person plural pronoun.

3.5.2 Pronouns across Mountain Ok

We find similar patterns of relationship between personal pronouns and agreement affixes in the other Mountain Ok languages. Table 10 sets out pronoun roots for the other Mountain Ok languages.

Table 10. Mountain Ok pronoun roots (based on Healey 1964a)

Pers	Num	Gen	Clus	Mian	Telefol	Tifal	Faiwol	Bimin
1	SG			né	ní- ~ ná-	na-	na-	ne
2		M		kéɓ-	káb-	kab-	kab-	kab-
		F		ób-	kúb-	kub-	kub-	ku
3		M		é	í- ~ yá-	a-	a-	e
		F		ó	ú- ~ ó-	u-	u-	u
1	PL		EXCL	ní	nú- ~ nó-	nu-	nu-	nu
			INCL	níɓ-				
2				íɓ-	íb-	ib-	ib-	yu ^a
3				í	í-	i-	i-	i

^a I consider this to be the Bimin reflex of proto Mountain Ok *íɓ- ‘2PL’, rather than a Bimin innovation.

There is only some variation in the vowels of the pronoun roots and the second person singular feminine in Mian apparently lost the initial /k/. None of the other Mountain Ok languages have a clusivity distinction, unlike Mian which shares this property with the Lowland Ok languages (Healey 1964a: 67; Fedden 2011: 5). The inclusive pronoun *níɓ-* was probably formed by compounding *ní* ‘we (EXCL)’ and *íɓ* ‘you (PL)’ to yield a first person plural inclusive pronoun.

3.5.3 Person affixes across Mountain Ok

Tables 11 and 12 show the subject suffixes and object prefixes across Mountain Ok, which are all cognate and likely related to the personal pronouns in the same way as described above for Mian.¹²

Table 11. Mountain Ok subject suffixes (based on Healey 1964a; except Tifal 1PL from Boush 1975 because of an empty paradigm cell in Healey 1964a)

Pers	Num	Gen	Mian	Telefol	Tifal	Faiwol	Bimin
1	SG		-i	-i	-i	-i	-i
2			-eb	-ab	-ab	-ab	-eb
3		M	-e	-a	-a	-a	-e
		F	-o	-u	-u	-u	-u
1	PL		-ob	-ub	-ub	-ub	-ub
2			-ib	-ib	-ib	-ib	-ib
3							

Table 12. Mountain Ok object prefixes (based on Healey 1964a; except Tifal 2SG and PL forms from Boush 1975 because of empty paradigm cells in Healey 1964a)

Pers	Num	Gen	Mian	Telefol	Tifal	Faiwol	Bimin
1	SG		na-	na-	ni-	na-	ne-
2			ka-	ka-	ti-	ka-	ka-
3		M	a-	a-	a-	a-	a-
		F	wa-	wa-	u-	wa-	wa-
1	PL						
2			i- ~ y(a)-	ya-	i-	ya-	ye-
3							

While subject suffixes are straightforward in their distribution – every finite verb has one – object prefixes show a more complex distribution. There are two complications: first, there are two different sets of prefixes, and second, there is sporadic agreement (Corbett 2006: 17). I will discuss these in turn.

The Mountain Ok languages have verbs which use a different set of prefixes for object agreement. In the descriptions of Telefol, Tifal, Faiwol and Bimin this is treated as a difference in inflection class. A verb that agrees with its object either belongs to inflection classes (IC) 1 (Table 12 above) or 2 (Table 13 below).¹³ For the sake of completeness the Mian forms are included in Table 12; more on the situation in Mian below.

Table 13. Mountain Ok object prefixes – IC2 (based on Healey 1964a)

Pers	Num	Gen	Mian	Telefol	Tifal	Faiwol	Bimin
1	SG		nem-	na-	nam-	namn-	nam-
2			kem-	ka-	tan-	kamn-	kam-
3		M	dob-	du-	da(b)-	dub-	dab-
		F	om-	ku-	um-	kub-	um-
1	PL						
2			dol-	i-	yim-	imn-	yam-
3							

12. All Mountain Ok languages have a third series of suffixes which index the recipient of ‘give’ or the additional argument in the BEN-construction. For reasons of space they cannot be discussed here in detail. I refer the reader to Healey (1964a: 74). For a detailed discussion of this set of suffixes in Mian, see Fedden (2010).

13. For Telefol see Healey (1965: 12), for Faiwol see Mecklenburg & Mecklenburg (1977: 27), for Tifal see Boush (1975: 13–14), and for Bimin see Weber (1997: 28–29).

Conspicuously many of the forms end in /m/, which might be an old O-indexing verb, which together with its prefix was at some point reanalyzed as a separate prefix series. In Mian this set of prefixes forms a separate system rather than a different inflection class (Corbett, Fedden & Finkel, in press). The Mian system works on an absolutive basis in terms of alignment. It includes further semantic distinctions in the third person, such as ‘long object’ or ‘bundle’, which is a Mian innovation. While the other Mountain Ok languages indeed seem to lack these distinctions, at least in Telefol there is evidence that this second set of prefixes also works on an absolutive basis, cf. *ku-men* [3SG.F.SBJ-fall] ‘it falls’ (Healey 1966: 7), which would translate into *om-méin* ‘it falls’ in Mian, where the prefix indexes the intransitive subject (S) and not the object (O). This makes an analysis of the prefix set in Table 13 as a distinct IC less likely, but before we can be sure further research into the alignment of argument marking in the other Mountain Ok languages is required. The first and second person forms of this second set of prefixes are also obviously related to the personal pronouns, so are the plural forms for all Mountain Ok languages except Mian. In all of these cases there are additional nasal segments involved, whose origin remains unclear. For the remaining forms a pronominal origin is less plausible.

The second complication is that all Mountain Ok languages have sporadic agreement. Only a subset of transitive verbs agree with their object, e.g. in Mian *-ná* ‘hit, kill’ agrees with its object (IC 1), whereas *bou* ‘swat’ does not. With the descriptive material available on the other Mountain Ok languages besides Mian it is not possible to identify exhaustive lists of verbs with object prefixes so that we do not know to which degree the agreeing and non-agreeing subsets differ. The only agreeing verb that we can be certain is shared between all Mountain Ok languages is ‘see’, cf. Mian *-tém*, Telefol *-tám*, Tifal *-ta*, Faiwol *-tam*, and Bimin *-tem*, which can be reconstructed as proto Mountain Ok **-tVm* (Healey 1964a: 151).

To sum up this section on agreement, at least some of the present-day agreement affixes could plausibly be phonetically reduced (toneless) personal pronouns incorporated into the verb.

(29) *Mountain Ok*

free personal pronoun > AGREEMENT

There are cases where this relationship is less clear, e.g. proto Mountain Ok **nV* ‘1SG’, but **-i* for subject in all Mountain Ok languages. In these cases the non-etymological suffix can typically be reconstructed for proto Mountain Ok.

4. The Mountain Ok reference-tracking system

A reference-tracking system (often called switch-reference system in the literature) is a discourse tracking device which monitors subjects by indicating through verbal morphology whether the subject of some other clause is the same (SS) or different (DS); see Haiman & Munro (1983); Roberts (1997); Stirling (1993); and more recently Van Gijn & Hammond (2016). In Papuan languages, reference-tracking morphology typically occurs in clause chaining constructions (Stirling 1993: 16) and is calculated with respect to the subject of the succeeding clause (cf. Foley & Van Valin 1984). A pair of examples from the Madang language Usan illustrates this.

(30) Usan

ye nam su-ab is-omei
 1SG tree cut-SS go.down-1SG.FPST
 ‘I cut the tree and (I) went down.’
 (Reesink 1983: 217 and p. c.)

(31) Usan

ye nam su-ine is-orei
 1SG tree cut-1SG.DS go.down-3SG.FPST
 ‘I cut the tree (and it went) down.’
 (Reesink 1983: 218 and p. c.)

Both examples consist of a medial clause with a medial verb, which has a same-subject marker or a different-subject marker, and a final clause with a final tense-inflected verb. It is typical of clause chains in TNG languages of the east on New Guinea, like the Madang language Usan and Kalam, that medial verbs are different from final verbs, in particular: (i) not all medial verbs are marked for subject person/number, (ii) medial verbs often cannot be marked for tense or mood categories, and (iii) the markers that medial and final verbs allow are formally and functionally distinct (i.e. reference-tracking function in medial verbs and TAM meanings in final verbs).

Mian, Telefol, Tifal and Faiwol have a reference-tracking system which operates in clause chains, but unlike the languages of the eastern Highlands, their systems are less grammaticalized,¹⁴ which is also characteristic of languages of the West Papuan Highlands, e.g. Dani (Bromley 1981) and Kapauku (Ekagi) (Bill Foley, p. c.). There are generally few differences between medial and final verbs; more strikingly the forms which express tense and aspect meanings in final verbs are also used in medial verbs to convey reference-tracking information. This is illustrated for Mian *-b*, which means IPFV in final verbs, in (32), and (DS.)SIM, in (33).

(32) Mian

ngaan-b-e=be
 call.IPFV-IPFV-3SG.M.SBJ=DECL
 ‘He is calling.’

(33) Mian

ngaan-b-e=a naka=i wentê-n-ib=a
 call.IPFV-(DS.)SIM-3SG.M.SBJ=MED man=PL.AN hear.PFV-SEQ-3PL.AN.SBJ=MED
 ‘While he was calling, the men heard (him), and then ...’ [Dafinau]

The meaning DS appears in brackets because it is only an implicature based on the temporal structure of events and not a fully grammaticalized and entailed meaning. The formal identity and the semantic similarity of the two *-b* suffixes suggest a historical connection. In final verbs, *-b* signals that an event is on-going at a specific temporal reference point, typically the moment of speaking (its origin being the existential verb). In medial verbs, *-b* indicates that an action is on-going when the next event is taking place, i.e. the two actions are overlapping and are at least partially simultaneous. The temporal structure of simultaneity invites an implicature of DS according to the assumption that “... we can normally expect that actions in succession are performed by the same person, while actions that overlap are performed by different people” (Longacre 1983: 198). However, this is an implicature in the Mian reference-tracking system, as there are examples of *-b* in medial verbs being compatible with conjoint

14. The terse description in Weber (1997: 71–72) suggests that Bimin is between these two types of system. It is like Usan in that SS-medial verbs are only inflected with a single suffix and in that there is less overlap between the sets of forms used in medial and in final verbs than in the other Mountain Ok languages. DS-medial verbs on the other hand are morphologically more elaborate than in the eastern Highlands languages, which is more reminiscent of Mountain Ok.

PL.AN.OBJ-see.PFV-RECP exist-IPFV-3PL.AN.SBJ=DECL
 ‘They are glancing at each other.’

The participants in a reciprocal event occupy the same set of argument positions they would in a normal clause, i.e. they have to be (i) subjects and (ii) objects. The existential verb agrees with the whole set of reciprocants and the set of reciprocants is cross-referenced on the verb with an object prefix, cf. *ya-* in (37) above.

However, example (37) is strongly dispreferred for situations with just two participants. In such a situation the non-subject reciprocant is cross-referenced by a suffix in the singular, so Mian merges the agents through plural subject marking, whereas it keeps the patients apart through singular object marking.

(38) Mian
a-têm'-sese *bl-∅-io=be*
 3SG.M.OBJ-see.PFV-RECP exist-IPFV-3PL.AN.SBJ=DECL
 ‘They (two men) are glancing at each other.’

There is a constructional variant which is syntactically quite different and already looks more like a clause chain with different-subject suffixes (*-s*, also expressing event sequentiality) on the verbs which describe the reciprocal subevents. However, the constructional variant still has dedicated reciprocal semantics. Example (39) illustrates this constructional variant:

(39) Mian
a-têm'-s-e *a-têm'-s-e*
 3SG.M.OBJ-see.PFV-DS.SEQ-3SG.M.SBJ 3SG.M.OBJ-see.PFV-DS.SEQ-3SG.M.SBJ
bl-∅-io=be
 exist-IPFV-3PL.AN.SBJ=DECL
 ‘They (two men) are glancing at each other.’

As in the *sese*-construction above, the existential verb is in the plural summarizing the reciprocal action as a whole. The different-subject suffix *-s* behaves in an unusual non-linear or circular fashion. In clause chaining constructions, *-s* is only anticipatory. Evans (2010) coined the term “unified zigzag construction” for such constructions where “a complex form of verb chaining [is] zigzagging between subevents (successive transitive verbs, each marked with a different subject marker, and agreeing with one actor in person and number followed by an intransitive summary auxiliary agreeing with the whole set)” (Evans 2010: 17). A similar reciprocal construction can be found in the Papuan languages Amele (Roberts 1987) and Hua (Haiman 1980).

The development from the *zigzag*-construction (V-s-e V-s-e) to the *sese*-construction (V-*sese*) was possibly due to phonological reduction. The deleted material is struck through in (40), which otherwise is an exact repetition of (39) above:

(40) Mian
a-têm'-s-e ~~*a-têm'-s-e*~~
 3SG.M.OBJ-see.PFV-DS.SEQ-3SG.M.SBJ ~~3SG.M.OBJ-see.PFV-DS.SEQ-3SG.M.SBJ~~
bl-∅-io=be
 exist-IPFV-3PL.AN.SBJ=DECL
 ‘They (two men) are glancing at each other.’

If this is true the origin of the *zigzag*-construction was a biclausal description of the reciprocal situation, consisting of two medial clauses chained together, which express the bounded subevents making up the reciprocal situation. The predicate that expresses the reciprocal action is the same in both clauses but the argument positions are reversed, according to the template $NP_j V-s NP_k$ and then $NP_k V-s NP_j$, where $j \neq k$. Each participant is once encoded as the starting point and once as the endpoint of the reciprocal subevent. Consider example (41):

- (41) Mian
a-têm'-s-e=a
 3SG.M.OBJ-see.PFV-DS.SEQ-3SG.M.SBJ=MED
a-têm'-s-e=a
 3SG.M.OBJ-see.PFV-DS.SEQ-3SG.M.SBJ=MED
 'he_j glances at him_k and he_k glances at him_j, and then ...' (where $j \neq k$)
 OR 'he_j glances at him_m and he_k glances at him_m, and then ...' (where $j \neq k \neq m$)

In the reciprocal interpretation of (41) there are two male referents and two sequential glancing events which are expressed in a clause chaining construction. Note that reciprocal semantics are not entailed here. A non-reciprocal reading is possible, where there are three men and two of them (indexed as *j* and *k*) glance at the third man (indexed as *m*).

- (42) Mian
 clause chain (involving *-s* 'DS.SEQ') > RECIPROCAL

Mian reciprocals are grammaticalizations from clause chains which were originally used to describe both subevents of a reciprocal situation involving switch-reference morphology. Although at least Amele and Hua have the *zigzag*-construction with a similar origin as in Mian, only Mian seems to have gone the additional step and fused the two clauses together resulting in a single reciprocal suffix *-sese*. This type of grammaticalization of reciprocals remains unique.

6. Conclusion

A first study in grammaticalization in a family is necessarily selective. In this chapter it was my aim to present the most important grammaticalization channels in Mountain Ok languages, both the ones that are well-established in the literature and the less familiar ones. I will begin this conclusion with a summary of the grammaticalization channels that we find in Mountain Ok.

- (43) a. demonstrative > PERSONAL PRONOUN and ARTICLE
 b. interior, hole > IN; top (surface) > ON (SPATIAL) > ON (TEMPORAL)
 c. move > PERSISTIVE (Mian)
 d. leave > COMPLETIVE (Mian)
 e. go > HABITUAL (Tifal)
 f. exist > CONTINUOUS (except Bimin)
 g. verb (in a serial verb construction) > PERFECTIVE, IMPERFECTIVE
 h. hit > PERFECTIVE (Mian)
 i. free personal pronoun > AGREEMENT
 j. give > BENEFACTIVE (except Faiwol and Bimin)
 k. exist-for > POSSESSIVE (Mian)

- l. top (surface) > ON > POSSESSIVE (Mian)
- m. sleep + impersonal inflection > HESTERNAL PAST (Mian)
- n. exist > IMPERFECTIVE > SIMULTANEOUS (> DIFFERENT SUBJECT) (except Bimin)
- o. clause chain (involving -s 'DS.SEQ') > RECIPROCAL (Mian)

The Mountain Ok languages show a range of grammaticalization patterns which are well-known the world over. In the nominal domain we find the widely attested development of demonstratives into both pronouns and articles (45a). Widespread is also the development of nouns into spatial terms and (in the case of ON) into temporal ones (45b). In the verbal domain, aspect is of central importance. Here we find layers of grammaticalization: (45c-e) the use of independent verbs with an aspectual function, e.g. Tifal *une* 'go' for habitual meaning, (45f) productive suffixation with *-bi* 'continuous', and (45g-h) unproductive aspect suffixes, which plausibly come from verbs but whose verbal etyma can in most cases not be identified anymore synchronically. The development of the agreement system through the incorporation of pronouns into the verb (45i) is plausible, but cannot be proven with Mountain Ok data because the shift from free pronouns to bound (agreement) forms would have happened in pre-Mountain Ok times.

Less well-known from European languages but still amply attested in other parts of the world is the grammaticalization of the verb 'give' into a benefactive (45j) introducing a further argument with dative-like semantics. This construction feeds into the development of possessives (45k) and fits into Heine's (1997) *Goal Schema*. The development of locatives into possessives is typologically well-attested (45l).

On the other hand, there are some less well-established grammaticalization channels. First, Mian seems to have grammaticalized the verb *s* 'sleep' into a marker of hesternal past (45m), which is a rare grammaticalization channel, though semantically plausible. Second, the reference-tracking systems in clause chaining constructions of the Mountain Ok languages are less strongly grammaticalized than in the languages of the eastern Highlands. The meaning of event simultaneity developed from an aspect suffix. At least in Mian the meaning of different subject is a defeasible implicature (45n). The development of a switch-reference marker from an aspect marker is cross-linguistically rare. Third, and possibly most rare, there is evidence that reciprocals in Mian are grammaticalizations from clause chains which describe both subevents of a reciprocal situation (45o).

The study of the Mountain Ok branch of the Ok family from Papua New Guinea corroborates the validity of many well-known grammaticalization channels, but it also lets us discover new pathways, including the unique development of the Mian reciprocal from a clause chain to the *zigzag*-construction to a suffix.

Abbreviations

1 - first person, 2 - second person, 3 - third person, AN - animate, AUX - auxiliary, BEN - benefactive, CONN - connective, CONT - continuous, DECL - declarative, DEF - definite, DEM - demonstrative, DIST - distal, DS - different subject, F - feminine, F_CL - F-classifier, FOC - focus, FPST - far past, GPST - general past, HPST - hesternal past, IMM - immediate, IPFV - imperfective, IRR - irrealis, M - masculine, MED - medial, N1 - neuter 1, NANPL - not animate plural, NEG - negation, OBJ - object, PFV - perfective, PL - plural, POSS - possessive, PQ - polar question, PRET - preterite, PRS - present, PST - past, R - recipient, REAL - realis, RECP - reciprocal, RPST - remote past, SBJ - subject, SEQ - sequential, SG - singular, SIM - simultaneous, SS - same subject, VN - verbal noun.

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