

NUMBER IN MERYAM MIR

Stephen Jones
University of Oxford

Proceedings of the LFG15 Conference

Miriam Butt and Tracy Holloway King (Editors)

2015

CSLI Publications

<http://csli-publications.stanford.edu/>

Abstract

Meryam Mir is an Eastern Trans-Fly Papuan language spoken in the Torres Straits. It has four number categories which are exhibited through complex morphosyntax, with marking principally on verbs. Accounts of the language to date (Piper, 2013; Ray, 1907) have considered only argument number. Reanalysis of a fragment of the language demonstrates that number phenomena can be better explained by including verbal number (Durie, 1986) in the account. The reanalysis also suggests that Arka’s assumption of a single feature set for argument and verbal number in Marori (Arka, 2012) does not hold for Meryam Mir. For argument number, it demonstrates that the Meryam Mir number categories and morphological alternations can be generated by a feature set including the novel feature $[\pm\text{GROUP}]$. The proposed feature set is compatible with those proposed by Sadler (2011) for Hopi as well as Arka for Marori (with some adaptation). For verbal number expressed through verb stem alternations, the feature $[\pm\text{BOUNDED}]$ is proposed and tested. Further work is required to account for other verbal number phenomena and the small amount of data currently available leaves some questions unresolved.

1 Introduction

Meryam Mir is an endangered Papuan language with around 20 native speakers, one of four recorded from the Eastern Trans-Fly family, spoken on Mer Island and neighbouring islands in the eastern Torres Strait. It has basic SOV¹ word order, with split ergative case marking. There are four number categories, singular, dual, paucal, and plural, expressed predominantly through multiple agreement on verbs. Originally described by Ray (1907), a fuller account of the language has been given by Piper (2013).

This paper considers a fragment of the grammar: number marking by inflectional affixes and verb stem alternations. It establishes the presence of verbal number (plurality of events as opposed to plurality of event participants) as a distinct category in Meryam Mir with features that are also distinct from those underlying argument number. It proposes a novel argument feature set for the language, consistent with other LFG accounts of number features (Sadler, 2011; Arka, 2012) and also proposes one possible feature involved in the expression of verbal number.

[†]I thank Mary Dalrymple, who supervised the Masters thesis from which this paper is summarised, and Nick Piper, who collected and published the bulk of data on which the thesis is based. The paper has been greatly improved by the comments of the editors and an anonymous reviewer.

¹The following abbreviations are used. A: Agent; ABS: Absolutive; AUG: Augmented; DU: Dual; FUT: Future; GenPL: Generic plural; HUM: Human; IPFV: Imperfective; LFG: Lexical Functional Grammar; LgPL: Large plural; LimPL: Limited plural; NP: Noun phrase; NPL: Nonplural; NSG: Nonsingular; NUM: Number; O: Object; OBJ: Object; PC: Paucal; PL: Plural; PRED: Predicate; PrN: Pronoun; PRS: Present; S: Subject; SG: Singular; SOV: subject-object-verb; SUBJ: Subject; V: Unspecified vowel; VNUM: Verbal number; VPL: Verbally plural; VSG: Verbally singular;

2 Expression of number in Meryam Mir

Meryam Mir has four number categories: singular (SG), dual (DU), paucal (PC) and plural (PL).² Paucal number is available only to human and high animate arguments. Nouns do not generally mark number, although optional number suffixes *-ey* and *-ba* mark noun phrases with DU number, and nouns that are members of groups respectively. Pronouns obligatorily mark a singular-nonsingular (NSG = DU/PC/PL) distinction.

Number marking on verbs includes inflection at prefix, infix and suffix sites. Suffixes usually mark subject number.³ Prefixes and infixes mark the number of the absolutive argument (intransitive S, transitive O). Where the absolutive argument is O or inanimate/low animacy S, the prefix/infix number distinction is SG-NSG. However, where the absolutive argument is high animacy S, the unusual distinction SG/PL-DU/PC is observed.

There is also a set of verbs with stem alternations that are frequently, though not exclusively, associated with the number of the verb's absolutive argument. The alternating forms may be morphologically related⁴ or may be suppletive pairs. The relevant verbs include examples from both morphological classes of verbs identified by Piper, Group I (atelic verbs, all intransitive) and Group II (telic verbs, either transitive or intransitive).

Turning first to the variants of number distinction: some verbs have a single root form for all number categories. These verbs come from Group I or Group II and do not seem to form a coherent semantic category.

Table 1: Verb stems with no alternation for number

	Group I		Group II
<i>ikasir</i>	'be going along'	<i>detager</i>	'tell'
<i>emer</i>	'nonhuman be sitting'	<i>ero</i>	'eat'
<i>og</i>	'climb'	<i>iri</i>	'drink'

A second type of distinction is between NPL and PL argument number. All verbs showing this distinction are intransitive with many of from Group I, though there are also Group II verbs that follow this pattern.⁵

A third type of distinction is between SG or DU argument number on the one hand, and PC or PL argument number on the other. The verbs showing this distinc-

²A fuller description of number marking is given in Piper (2013).

³Piper describes the operation of a number hierarchy on transitive verbs with some combinations of subject and object argument number. Where the object is a human/high animate with PC/PL number, and the subject has SG/DU number, the verb suffix can show agreement with the object in preference to the subject.

⁴Piper describes several processes of deletion or affixation by which the two forms are related.

⁵Piper gives the verb stems *Vgri* and *Vmer* shown in Table 2, where *V* represents an unspecified vowel: the verbs are only recorded with prefixes which result in the phonological deletion of the stem-initial vowel.

Table 2: Verb stems with alternation for NPL vs PL subject

<i>ike</i>	‘be(thing).NPL’	<i>Vgri</i>	‘be(thing).PL’
<i>emri</i>	‘sit-down.NPL’	<i>Vmer</i>	‘sit-down.PL’
<i>akawaret</i>	‘climb-onto.NPL’	<i>etir</i>	‘climb-onto.PL’

tion all come from Group II, and include transitive and intransitive verbs. Table 3 gives examples.

Table 3: Verb stems with alternation for SG/DU vs PC/PL argument

Intransitive verbs			
<i>ekwey</i>	‘stand up.SG/DU.S’	<i>eko</i>	‘stand up.PC/PL.S’
<i>bakyamu</i>	‘go.SG/DU.S’	<i>bakyaw</i>	‘go.PC/PL.S’
Transitive verbs			
<i>ep</i>	‘carry.SG/DU.O’	<i>ays</i>	‘carry.PC/PL.O’
<i>diskemer</i>	‘chase.SG/DU.O’	<i>dikes</i>	‘chase.PC/PL.O’
<i>dígwatmu</i>	‘pull in from sea. SG/DU.A/O’	<i>dígwat</i>	‘pull in from sea. PC/PL.A/O’

Piper identifies the number agreement for verb stem alternations of both types (NPL-PL subject, SG/DU-PC/PL object) as being in the main with the subject of intransitive verbs and the object of transitive verbs, in other words showing ergative alignment. However, there are a small number of verb stems that follow different patterns. Piper exemplifies a third type with the verb pair *dígwatmu* ‘pull in from sea.SG/DU.A/O’ – *dígwat* ‘pull in from sea.PC/PL.A/O’, shown in Table 3, where the PC/PL verb stem is selected if the either subject or the object has PC/PL number.

A fourth type of distinction is seen with the verb ‘to turn over’, for which Piper identifies three verb stem variants, conditioned by the number of the subject and/or the object argument: *dipigimer* ‘SG/DU.A.turn.over.SG/DU.O’, *dipigimeret* ‘PC/PL.A.turn.over.SG/DU.O’ and *dipiger* ‘turn.over.PC/PL.O’ For examples see Piper (2013, pp.81-82, exx. 3.10-3.14).

2.1 Anomalies

In the corpus of available texts there are examples where the verb marking does not fit exactly with argument number.⁶ In particular, there is a systematic mismatch for some Group II verbs with imperfective aspect marking.

Piper reports that “the present imperfective marker is used to indicate repetition/iterativity” (p.102), adding “forms in the imperfective often involve the paucal/plural form of the verb even when there is no paucal or plural S, A or O”. For

⁶This is in addition to the operation of the number hierarchy.

example, for the intransitive verb pair *dígwatmu/dígwat* ‘haul in fish’, the PC/PL stem must be used in imperfective aspect (1). The SG/DU stem is ungrammatical (2) even if the catch is only one or two fish (Piper, 2013, p.102, ex. 3.79).

- (1) *ka dígwat- li*
1SG.A haul.in.PC/PL.fish- PRS.IPFV
 ‘I am hauling in fish.’
- (2) **ka dígwatmu- li*
1SG.A haul.in.SG/DU.fish- PRS.IPFV
 (Intended) ‘I am hauling in a couple of fish.’

Piper also identifies idiosyncratic mismatches between argument number and verb stem. For example, the verb *ker* which generally functions as an auxiliary with the gloss ‘do’ also has an idiomatic meaning ‘fuck’. However, in this case, the PC/PL stem is required even when both arguments to the verb are singular (3).⁷

- (3) *ka mári na- ker- e*
1SG.A 2SG.O FUT.1+1/2.SG.O- do.PC/PL.O- FUT.1
 ‘I will fuck you’ (*ibid.* p.193, ex. 5.92)

3 Distinguishing argument number and verbal number

Piper’s and Ray’s accounts of Meryam Mir contain numerous anomalies and exceptions to argument number agreement. However, assuming the presence of verbal number (Durie, 1986) in the grammar allows the phenomena to be explained more coherently. Durie argues that suppletive verb pairs that are selected by number alternation encode the semantic category of verbal number, rather than syntactic argument number. Grounds for this include: (i) there is a strong tendency for verb pairs to mark “plurality of affect”, that is, an absolutive pattern, regardless of a language’s syntactic case alignment; (ii) there is no requirement for argument and verbal number marking to coincide, with verbal number agreeing with semantic number where there is a clash; (iii) verbal number can be expressed in languages without argument number marking on nouns or pronouns; and (iv) verbal number can be expressed in contexts where syntactic agreement is not present, such as derivational morphology, or within XCOMP arguments. Durie acknowledges a close relationship between argument and verbal number and concludes, “This provides the potential for concord between verbal number and NP Number, but this concord shows the expected properties of semantic selection rather than agreement.” (Durie, 1986, p.365)

As we have seen, Meryam Mir’s suppletive verb stem alternations are described by Piper as agreeing in the vast number of cases with either the subject of an intransitive verb or the object of a transitive verb, an absolutive alignment. This

⁷These idiosyncratic patterns may be lexicalised forms, but it is unclear how argument number accounts for the verb stem.

fits with Durie’s description of the “plurality of affect” inherent in verbal number. Durie also proposes that verbal number agrees with semantic, not syntactic number, which is arguably the case for examples (1) and (3) above, and that verbal number may mark distinctions not recognised by a language’s nouns or pronouns. Meryam Mir in general does not mark argument number on nouns, and there are many examples of mismatch between argument number marked on verb suffixes and marking on the verb stem. The number distinctions marked by verb stem alternation are described by Piper as SG/DU-PC/PL and NPL-PL, neither of which is a distinction marked on nouns or pronouns. Finally, Durie’s other condition is that suppletion is seen in contexts where there is no explicit number agreement. The examples of nominalised verbs found in the corpus are derived from verbs that have a single stem form, so it is not possible to test this condition. However, evidence against the other criteria suggests that there is justification for assuming that the suppletive forms mark verbal number.

Accordingly, I conclude that verbal number is a semantic category that can be systematically expressed in Meryam Mir.⁸ A summary of the marked number category distinctions and the sites where they are marked is given in Table 4.

Table 4: Available number distinctions and the sites which mark them

Site Category distinction				Argument number				Verbal number
				Nouns	Pronouns	Verb Prefix/ Infix	Verb Suffix	Verb Root
SG	DU	PC	PL	+	-	-	-	+
No distinction				+	-	-	-	+
SG	NSG			-	+	+	-	-
NPL			PL	-	-	-	-	*
SG/DU		PC/PL		-	-	-	+	*
SG/ PL	DU/PC		SG/ PL	-	-	+	-	-
SG	DU	PC	PL	-	-	-	+	-

* numerous systematic and idiosyncratic anomalies

Arka (2012) assumes that the same feature set underlies argument and verbal number categories in Marori, based on consistency of patterning at the marking

⁸From this point forward, where I am assuming verbal number, I will replace the argument number element of Piper’s glosses to reflect this, marking verbal plurality (VPL) or its lack (VSG).

sites. However, Meryam Mir does not show the same consistency of patterning. Verbal number shows only a binary distinction, patterning sometimes with one of two argument number distinctions, either NPL-PL or SG/DU-PC/PL, and sometimes with neither. Furthermore, the NPL-PL distinction is not seen in argument number. Accordingly, I will treat the feature systems for argument number and verbal number separately.

4 Features for argument and verbal number

This discussion of number feature systems follows work by Nordlinger (1997), Dalrymple and Kaplan (2000), Dalrymple et al. (2009), Sadler (2011), Arka (2011, 2012) and others in its treatment of features and agreement, and works within the framework of Lexical Functional Grammar (Bresnan, 2001; Dalrymple, 2001).

In this framework, categories such as case, number, gender, etc are analysed within the *f*-structure, rather than the *c*-structure. Category values are determined by unifying the set of features that are contributed from each lexical item in the *c*-structure that carries a feature specification. Within the *c*-structure, an individual lexical item can carry the full feature specification for a particular category, be partially-specified or underspecified for a category or feature, or even carry no specification. The final value of a category within an *f*-structure satisfies the constraints on features and values that are contributed by all lexical items that map to that *f*-structure. Agreement occurs where the intersection of feature sets carries no conflicting feature values, so the feature set $\{[+SG][+PL]\}$ is allowed within the grammar. Conversely, if a feature set carries conflicting values, such as $\{[+SG][-SG]\}$, it is ungrammatical because of a feature clash.

Under these assumptions, a number feature system for a language has three elements: a set of number categories, each associated with a set of number features and values; feature specifications for each lexical item that is marked for number; and analyses that generate *f*-structures with the desired meaning for sentences observed in the language, and which can account for ungrammaticality.

Although each language has its own set of available number categories (Corbett, 2000), I assume that the features that generate these categories are drawn from a universal set available to all languages, and that there is a plausible cognitive and semantic motivation for a particular number feature. I also assume that it is preferable for a morphologically-marked binary category distinction to be generated by the alternation of a single feature: if two features are required to vary together, it is unclear why alternations of the single features are not expressed.

4.1 Building on previously proposed feature sets

I will begin by examining proposals on number agreement systems made by Sadler (2011) for Hopi, and Arka (2012) for Marori, assessing the extent to which they can be applied to Meryam Mir, and thus whether a new proposal is necessary.

4.1.1 Sadler’s (2011) proposal for Hopi

Sadler looks at Hopi, which has three number categories, SG, DU and PL. Hopi nouns mark all three categories. However, pronouns and verbs mark only SG and PL categories: for pronominal subjects, DU number is expressed by the combination of a PL marked pronoun with a SG marked verb. Sadler accounts for this by proposing a number feature system with two features, [SG] and [PL], which have overlapping entailments, shown in (4)-(5).

- (4) [+SG] $\rightarrow |x| \leq 2$
 (5) [+PL] $\rightarrow |x| \geq 2$

The features combine as shown in Table 5 to generate the three categories.

Table 5: Hopi number features (Sadler, 2011)

CATEGORY	FEATURES	
	[SG]	[PL]
Singular	+	–
Dual	+	+
Plural	–	+

Detailed feature specifications for lexical entries show asymmetries between and within word classes. Nouns are fully specified in all three categories. However, pronouns and verbs are underspecified for one of the two number categories they mark, although for each word class, a different category is underspecified, as shown in Table 6, extracted from Sadler (2011, ex.101, p.412), row labels expanded.

Table 6: Asymmetries in Hopi feature specifications (Sadler, 2011)

		Pronouns	Verbs
Category marking	Singular	(\uparrow NUM SG) = + (\uparrow NUM PL) = –	(\uparrow SUBJ NUM SG) = +
	Plural	(\uparrow NUM PL) = +	(\uparrow SUBJ NUM SG) = – (\uparrow SUBJ NUM PL) = +

As a result of this partial underspecification, pronouns marked as “plural” actually indicate number categories DU or PL. Similarly, verbs marked as “singular” actually indicate categories SG or DU.⁹ Thus Sadler demonstrates how a sentence consisting only of a pronoun and a verb, neither of which explicitly carry DU marking, can unambiguously represent a DU subject. Examples (6)-(8) are Sadler’s examples (p.410, exx 93a.-c.) with amended glosses.

⁹A more precise description of the pronoun and verb category distinctions, which are both given by Sadler as “SG-PL”, would be NPL-PL for pronouns and SG-NSG for verbs.

- (6) *Pam wari*
That.(NUM = SG) run.PFV.(SUBJ NUM = SG ∨ DU)
'S/he ran.'
- (7) *Puma yúutu*
That.(NUM = DU ∨ PL) run.PFV.(SUBJ NUM = PL)
'They ran.'
- (8) *Puma wari*
That.(NUM = DU ∨ PL) run.PFV.(SUBJ NUM = SG ∨ DU)
'They (two) ran.'

4.1.2 Arka's (2012) proposal for Marori

Arka's account of Marori, a Papuan language, describes five number categories SG, DU, Limited Plural (LimPL), Generic Plural (GenPL) and Large Plural (LgPL).¹⁰ It has separate morphological marking for argument and verbal number. Arka assumes the same feature set for both argument and verbal number, $\{[\pm\text{SG}], [\pm\text{PL}], [\pm\text{AUG}]\}$, where [+AUG] indicates augmentation of the semantic range of a feature. Table 7 shows how the categories are generated from combinations of feature values.

Table 7: Marori number features (Arka, 2012, p.40)

CATEGORY	FEATURES		
	[SG]	[PL]	[AUG]
Singular	+	-	-
Dual	-	-	-
Limited Plural	-	-	+
Generic Plural	-	+	-
Large Plural	-	+	+

From Table 7 the following entailments can be derived.

- (9) $[+\text{SG}_{Arka}] \rightarrow |x| = 1$
(10) $[+\text{PL}_{Arka}] \rightarrow |x| \geq 4+$

A comparison with Sadler's features (4, 5), shows that Arka's proposal has a gap in the entailments of the two features, rather than the overlap of entailments which is required to construct the range of Hopi number categories. However, the entailment of $[+\text{SG}_{Arka}]$ is the converse of $[+\text{PL}_{Sadler}]$, which suggests that it may be possible to remove the gap in Arka's entailments by reversing the polarity of the definitions, shown in (11, 12).

¹⁰The upper boundary of LimPL is not fixed, GenPL entails more than 3 items.

- (11) $[+SG_{Arka}] \rightarrow |x| = 1 \Rightarrow [-SG_{Arka}] \rightarrow |x| \geq 2 = [+PL_{Sadler}]$
(12) $[+PL_{Arka}] \rightarrow |x| \geq 4+ \Rightarrow [-PL_{Arka}] \rightarrow |x| \leq 3+ \approx [+SG_{Sadler}]$

If we reverse the polarity of Arka’s features such that $[+SG'_{Arka}] = [-PL_{Arka}]$ and $[+PL'_{Arka}] = [\pm SG_{Arka}]$, we derive the category specifications shown in Table 8.

Table 8: Comparing revised Marori number features with Hopi

CATEGORY	Marori features			Hopi features	
	$[SG'_{Arka}]$	$[PL'_{Arka}]$	[AUG]	$[SG_{Sadler}]$	$[PL_{Sadler}]$
Singular	+	–	–	+	–
Dual	+	+	–	+	+
Limited Plural	+	+	+	<i>n/a</i>	<i>n/a</i>
Generic Plural	–	+	–	–	+
Large Plural	–	+	+	<i>n/a</i>	<i>n/a</i>

There is a discrepancy in the entailments of $[\pm SG_{Sadler}]$ and $[\pm SG'_{Arka}]$ (13).

- (13) $[+SG_{Sadler}] \rightarrow |x| \leq 2; [+SG'_{Arka}] \rightarrow |x| \leq 3+$

However, this discrepancy only occurs in Marori for the LimPl category with number values of 3+, which also carry the feature [+AUG]. As Arka defines [+AUG] as augmenting the semantic space of other co-occurring features, this is just what we expect. We can therefore redefine the entailment of the universal feature $[\pm SG]$ which is sensitive to the feature set F of its category as follows.

- (14) $[+SG] \rightarrow |x| \leq n; [+AUG] \notin F \Rightarrow n = 2, \text{ else } n \text{ set for a given language}$

With this revised definition, we now have feature systems for Hopi and Marori that are compatible with a universal feature set. $[\pm SG]$ is defined formally in (14), $[\pm PL]$, defined formally in (5), and $[\pm AUG]$ defined informally.

4.1.3 Testing with Meryam Mir

It is now possible to use the feature set elaborated from Sadler’s and Arka’s proposals to test whether it generates the set of category distinctions observed at different marking sites in Meryam Mir, and also Arka’s assumption that the feature sets for argument number and verbal number are identical.

In comparison to Marori, Meryam Mir has only four number categories, and so it is necessary to identify the correspondence between the two. Aggregating

the Marori feature sets is not possible because it would create specifications with inherent feature clash, as shown for one of the possible unifications in (15).¹¹

$$\begin{aligned}
 (15) \quad & \text{Generic Plural} \cup \text{Large Plural} \\
 & = \{[-\text{SG}][+\text{PL}][-\text{AUG}]\} \cup \{[-\text{SG}][+\text{PL}][+\text{AUG}]\} \\
 & = * \{[-\text{SG}][+\text{PL}][+\text{AUG}][-\text{AUG}]\}
 \end{aligned}$$

Based on Arka's and Piper's accounts, I assume that the categories SG and DU are identical in Marori and Meryam Mir. This leaves the following three options for mappings between the various Plural categories in Marori and PC/PL in Meryam Mir, from which the feature specifications in Table 9 are derived.

- (i) $PC_{MeryamMir} = LimPL_{Marori}$
 $PL_{MeryamMir} = GenPL_{Marori}$
- (ii) $PC_{MeryamMir} = LimPL_{Marori}$
 $PL_{MeryamMir} = LgPL_{Marori}$
- (iii) $PC_{MeryamMir} = GenPL_{Marori}$
 $PL_{MeryamMir} = LgPL_{Marori}$

Table 9: Possible Meryam Mir number feature specifications mapped from Marori

Category	Feature specifications								
	Mapping (i)			Mapping (ii)			Mapping (iii)		
	[SG]	[PL]	[AUG]	[SG]	[PL]	[AUG]	[SG]	[PL]	[AUG]
Singular	+	-	-	+	-	-	+	-	-
Dual	+	+	-	+	+	-	+	+	-
Paucal	+	+	+	+	+	+	-	+	-
Plural	-	+	-	-	+	+	-	+	+

Looking at the relationship between categories and features for the three mappings, mapping (i) seems intuitively most satisfactory, with Paucal number representing an augmentation of the semantic space of Dual, and Plural being neither singular nor augmented. In mapping (ii), the Plural category is the augmented semantic space of a the bare plural feature, which does not appear. And in mapping (iii), the feature [+PL] without augmentation denotes the Paucal category, which is available only to humans and high animates. This is not impossible, but does raise questions about the universality of the definition for the feature [\pm PL].

The category distinctions we are seeking to explain were presented in Table 4 above. In Table 10 we see the features whose values are required to alternate, in order to generate each of the observed number category distinctions.

¹¹Harbour (2007), in accounting for number patterns in Kiowa, explicitly requires feature clashes, which he describes as 'overspecification', but these cases are then unambiguously marked in the morphosyntax. This does not appear to be the case in Meryam Mir and so I maintain the assumption that feature clashes are ungrammatical.

Table 10: Feature alternations required for argument number distinctions

Category distinction	Mapping (i)	Mapping (ii)	Mapping (iii)
SG–NSG	[PL]	[PL]	[PL]
SG/PL–DU/PC	[SG][PL]	[SG][PL]	[PL][AUG]
SG/DU–PC/PL	[SG][PL][AUG]	[AUG]	[SG]
SG–DU–PC–PL	[SG][PL][AUG]	[SG][PL][AUG]	[SG][PL][AUG]

None of the three mappings is able to generate the binary distinction SG/PL–DU/PC by varying a single feature. Mappings (i) and (ii) denote DU/PC with the feature values [+SG][+PL], whereas for SG/PL, one of those two features has a negative value. Under mapping (iii), DU/PC is observed when the values of [\pm PL] and [\pm AUG] are identical, both either positive or negative, and SG/PL is observed when those two features have differing values. Thus none of the three mappings satisfactorily account for the binary distinctions.

Furthermore, under mapping (i), the category distinction SG/DU–PC/PL is derived only by alternating all three number features. It appears therefore that the most plausible mapping of feature specifications, mapping (i), is the most problematic for explaining argument number, and the other two less plausible mappings are also problematic.

For verbal number, the numerous exceptions to argument number agreement suggest a distinct feature set. Even where verbal number marking does align with argument number, the binary NPL-PL distinction described by Piper is only generated by a single feature alternation in mapping (iii), and here it is the feature [\pm AUG] that varies. As [\pm AUG] is a secondary feature that extends the semantic range of other features, this is not a satisfactory explanation. Accordingly, I conclude that verbal number alternations are generated by a different feature set.

4.2 Revised proposal: argument number

The three binary distinctions that we are seeking to explain are SG–NSG, SG/DU–PC/PL and SG/PL–DU/PC. The first two of these share the same entailment as the features [\pm PL] and [\pm SG] respectively, assuming that the feature [\pm AUG] is not present and so the entailment of [+SG] is $|x| \leq 2$. However, the distinction SG/PL–DU/PC is not easily delivered. This distinction is therefore a good place to start looking for possible alternative features.

One point that the DU and PC number categories have in common is that, although nouns in Meryam Mir do not routinely mark number, the suffixes *-ba* and *-ey* are optionally available for common and proper nouns. These suffixes indicate membership of a group and trigger DU or PC suffix agreement as appropriate.

Wood (2007) discusses the cognitive process of constructing groups based on

similarity, and how this might apply to the construction of plural actions as well as nominal plurals. A number of features could be proposed that distinguish members of small groups from both individuals and pluralities. One possibility is a feature $[\pm\text{GROUP}]$, which foregrounds the membership of a collection of individuals. Another is its reversed-polarity counterpart $[\pm\text{ATOM}]$, where singular entities and undifferentiated plurals are described as atomic, and groups with a countable number of members are not atomic. This second would be consistent with common nouns not carrying number, but would imply that the marking of nouns with the ‘group’ and ‘dual’ suffixes *-ba* and *-ey* is triggered by the absence of atomicity. This would overgenerate in situations where a noun was underspecified for $[\text{ATOM}]$, as the absence of $[\text{+ATOM}]$ would trigger suffixation. This makes the feature $[\pm\text{GROUP}]$ preferable.

Accordingly, as a first approximation, I will assume that Meryam Mir does not use Arka’s proposed feature $[\text{AUG}]$, but instead has the feature $[\pm\text{GROUP}]$, which is defined as “a group with a countable number of distinguishable atomic entities”. This produces the feature specification for Meryam Mir number categories shown in Table 11, which generates the binary category distinctions by a single feature alternation, as shown in Table 12.

Table 11: Revised proposal of a feature set for Meryam Mir

Category	Features		
	$[\text{SG}]$	$[\text{PL}]$	$[\text{GROUP}]$
Singular	+	–	–
Dual	+	+	+
Paucal	–	+	+
Plural	–	+	–

Table 12: Proposed features underlying argument number category distinctions

Category distinction	Varying feature
(a,b) SG–NSG	$[\pm\text{PL}]$
(c) SG/PL–DU/PC	$[\pm\text{GROUP}]$
(d) SG/DU–PC/PL	$[\pm\text{SG}]$
(e) SG–DU–PC–PL	$[\text{SG}][\text{PL}][\text{AUG}]$

4.3 Revised proposal: verbal number

As the motivation for separate verbal number categories arises in part from the lack of complete fit with argument number in Meryam Mir, I will begin this section

by returning to those cases where there is lack of agreement between argument number and the number marked on verb stem, or where there is other, inadequately explained morphology related to verbal number, which are illustrated in examples (16)-(18).

(16) *ka dígwat- li*
 1SG.A haul.in.fish.VPL- PRS.IPFV
 ‘I am hauling in fish’ [From (1), amended gloss.]

(17) **ka dígwatmu- li*
 1SG.A haul.in.fish.VSG- PRS.IPFV
 (Intended) ‘I am hauling in a couple of fish’ [From (2), amended gloss.]

(18) *ka mári na- ker- e*
 1SG.A 2SG.O FUT.1+1/2.SG.O- do.VPL- FUT.1
 ‘I will fuck you’ [From (3), amended gloss.]

Considering these examples, the following points arise in relation to agreement: there is no feature clash between singular pronouns and either VSG or VPL stems (16)-(18); and the ungrammaticality of (17) suggests that there may be a feature clash between the VSG stem and IPFV aspect.

4.3.1 Boundedness

Cusic (1981) explores the linguistic expression of multiple events and identifies the role of “boundedness” both in grammatical expression (including aspect) and in lexical expression (aktionsart: Agrell, 1908) of event plurality. The relationship between aktionsart, aspect and verbal number is further elaborated by Wood (2007) in developing a typology of pluractionality.

Moens and Steedman (1988) do not specifically refer to aspect, but examine the relationship between lexical category of verbs, tense and aspect. They contrast events with states, and subcategorise events according to their duration (atomic/extended) and according to whether or not the event has a consequence for one of its participants (Table 13). They also show how the nature of an event denoted by a verb may shift between their categories in particular sentential contexts, such as tense/aspect combinations. There are pairwise similarities between Moens and Steedman’s event categories and the “lexical aspect” categories proposed by Comrie (1976): point/semelfactive; process/activity; culmination/achievement; and culminated process/accomplishment.

Given the interaction between aspect and verbal number in Meryam Mir, and in the light of Moens and Steedman’s, and Wood’s analyses of the relationship between aktionsart, aspect and verbal number, I propose to investigate the concept of boundedness in relation to aspect and aktionsart, to see if this can support the definition of a verbal number.

Table 13: Moens & Steedman’s subcategorisation of events

	Events		States
	atomic	extended	
+conseq	CULMINATION <i>recognise, spot, win the race</i>	CULMINATED PROCESS <i>build a house eat a sandwich</i>	<i>understand love, know resemble</i>
–conseq	POINT <i>hiccup tap, wink</i>	PROCESS <i>run, swim, walk play the piano</i>	

We can see the relevance of this to Meryam Mir by considering the analogy between example (16), where VPL appears in the imperfective aspect and the behaviour of the verb ‘jump’ in English. One jumping event is a point event, whereas the state of ‘jumping’ assumes iteration and an action in progress. In an appropriate context, a state reading is coerced from a verb that at its base is atomic and –conseq in Moens and Steedman’s terms. Moving beyond aspect changes, bringing an adverbial into the sentence context can coerce a culmination (‘I jumped out of the window.’) and even a culminated process (‘I jumped until the floorboards gave way.’)

None of these transitions require a change in the verb which is used: ‘jump’ remains grammatical. However, in Meryam Mir the VSG form of ‘jump’ is not grammatical with imperfective aspect: the VPL form is required (19).

- (19) *ka éwpamaret- li*
 1SG.S jump.VPL- PRS.IPFV
 ‘I am jumping’ (Piper, 2013, p.102, ex.3.78)

There appear to be different dimensions of boundedness. Where the difference between VSG and VPL forms is closely related to argument number, there is boundedness of participants. Telic actions are bounded by their inherent goal, whereas states and atelic actions are unbounded. Atomic events — semelfactives and achievements — are bounded within a very short time, whereas states, activities and accomplishments have a much longer duration. Furthermore it appears that a change in only one of these elements of boundedness is sufficient to require the use of a VPL verb where this is available, even if other elements remain bounded. Thus in (16) and (17), the number of participants — subject and object — remains bounded, but the removal of a time boundary by imperfective aspect triggers the use of the VPL verb stem.

In this model, each verb at its core defines an action or state that has an inherent specification of time-boundedness, telicity, and potentially also of the number

of affected participants (e.g. the difference between ‘kill’ and ‘massacre’ in English). Alongside this, a VSG stem can indicate a further level of boundedness of the activity, because of a restricted number of repetitions or participants. Accordingly I propose a feature [BOUNDED] which reflects the presence or absence of this restriction.

When we consider aspect, it is clear that, regardless of aktionsart, imperfective aspect indicates that the action is not yet complete, which suggests that imperfective aspect is inherently [-BOUNDED].

$$(20) \quad (\text{ASPECT} = \text{IPFV}) \Rightarrow (\uparrow \text{VNUM BOUNDED}) =_c -$$

For verb stem alternations, VSG stems are specified as [+BOUNDED]. This is loosely associated with the argument number feature [+SG], although this association can be overridden.¹² The relationship between the verbal number feature [BOUNDED] and the argument number feature[SG] can be stated as:

$$(21) \quad (\uparrow \text{VNUM BOUNDED}) = + \Rightarrow (\uparrow \text{ABS NUM SG}) = +$$

VPL stems, however, are unspecified for [\pm BOUNDED].

One challenge to this association is the differing basic patterns of alignment between absolutive argument number and verbal number: Group I verbs with stem alternations tend to follow the distinction NPL-PL, whereas Group II verbs with stem alternations tend to follow the distinction SG/DU-PC/PL. This requires more investigation. Given that the PC category is only available to humans and high animates, low- and inanimate arguments align with VSG only where they are explicitly SG or DU, across all verbs. For humans and high animates the effective distinction seems to be that in Group I, PC human/high animate arguments align with VSG (and under the current proposal would therefore have the feature [+SG], although this is contradictory to the definition in table 14), whereas in Group II they align with VPL.

5 Feature specifications

If the arguments carry these semantic features, feature specifications can then be proposed for number-marked lexical items within each word class. Table 14 shows the proposed values for all argument-marked items. Each entry in the “Morphosyntactic features” column relates to a group of morphemes that are marked for that feature: morphemes within each group may be further differentiated for tense, aspect, mood etc.

The feature specifications for nouns, pronouns, verb pre-/infixes and Group I verb suffixes are reasonably straightforward, each requiring only one feature to vary. For the SG/PL–DU/PC distinction, agreement with the [GROUP] feature is

¹²The language data are insufficient for a formal representation of the conditions for overriding the association.

Table 14: Fragment of morphological number feature specification

Morphosyntactic features	f-structure features
N-suffix:DU (-ey)	(↑ NUM GROUP) = + (↑ NUM SG) = +
N-suffix:NSG (-ba)	(↑ NUM GROUP) = +
PrN:SG	(↑ NUM PL) = -
PrN:NSG	(↑ NUM PL) = +
V-pre-/infix: SG	(↑ ABS NUM PL) = -
V-pre-/infix: NSG	(↑ ABS NUM PL) = +
V-pre-/infix: SG/PL	(↑ ABS NUM GROUP) = - (↑ ABS ANIM HUM) = +
V-pre-/infix: DU/PC	(↑ ABS NUM GROUP) = + (↑ ABS ANIM HUM) = +
V-root: VSG	(↑ VNUM BOUNDED) = +
V-suffix(Group I): SG/DU	(↑ SUBJ NUM SG) = +
V-suffix(Group I): PC/PL	(↑ SUBJ NUM SG) = -
V-suffix(Group II): SG	(↑ SUBJ NUM SG) = + (↑ SUBJ NUM PL) = - (↑ OBJ NUM SG) = _c +
V-suffix(Group II): DU	(↑ SUBJ NUM SG) = + (↑ SUBJ NUM PL) = + (↑ OBJ NUM SG) = _c +
V-suffix(Group II): PC	(↑ ARG _x NUM SG) = - (↑ ARG _x NUM GROUP) = + $\left(\begin{array}{l} ((\uparrow \text{ARG}_y \text{ NUM SG}) =_c -) \vee \\ ((\uparrow \text{ARG}_y \text{ NUM GROUP}) =_c -) \end{array} \right)$
V-suffix(Group II): PL	(↑ ARG _x NUM SG) = - (↑ ARG _x NUM GROUP) = -
V-suffix(Group II): IPFV	(↑ VNUM BOUNDED) = -

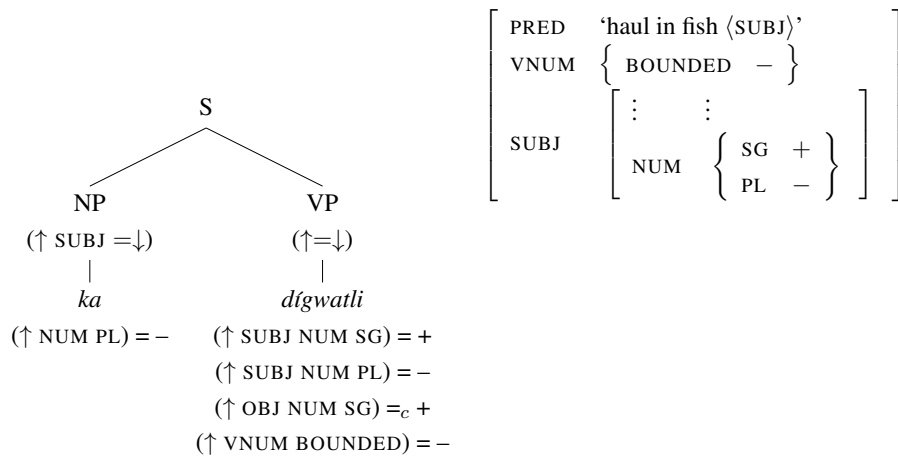
triggered by the presence of a proposed [+HUM] animacy feature, for humans and high animates.

5.1 Feature analysis

The model for verbal number can now be tested by generating c-structures and f-structures for sentences (16)-(18) and seeing whether they correctly predict grammaticality or ungrammaticality. C-structures are set out in examples (22)-(24). For brevity, only those features relating to argument number and verbal number are included in the trees.

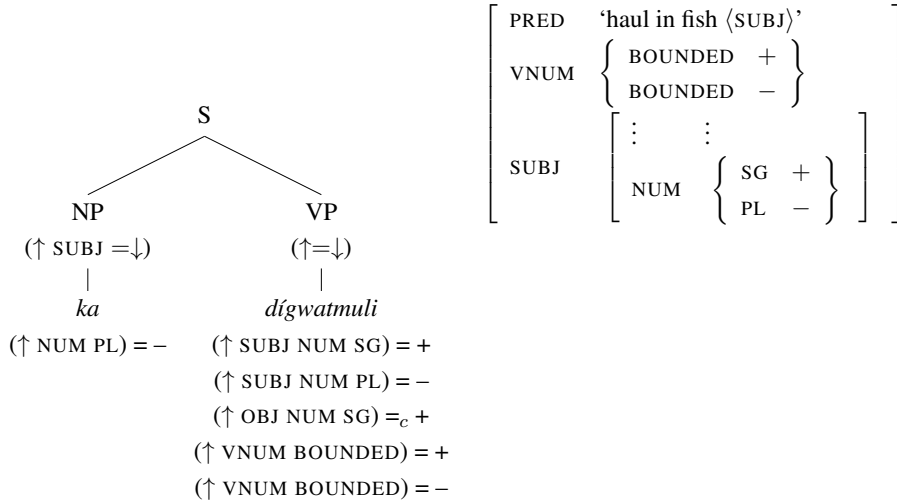
Sentence (22) is grammatical as the VPL form of the verb is unspecified for [BOUNDED], and the IPFV suffix contributes the feature [-BOUNDED]. However, there may be a problem arising from the specification of the number suffix. According to the specification given in Table 14, there is a constraint on the object number (\uparrow OBJ NUM SG) =_c + . Piper does not give examples of the verb with PC/PL object so it is not clear whether the suffix number hierarchy applies. One solution may be that this is an intransitive verb denoting an activity, in which case the object number constraint would not apply.

- (22) *ka dġgwat- li*
 1SG.A haul.in.fish.VPL- PRS.IPFV
 ‘I am hauling in fish’



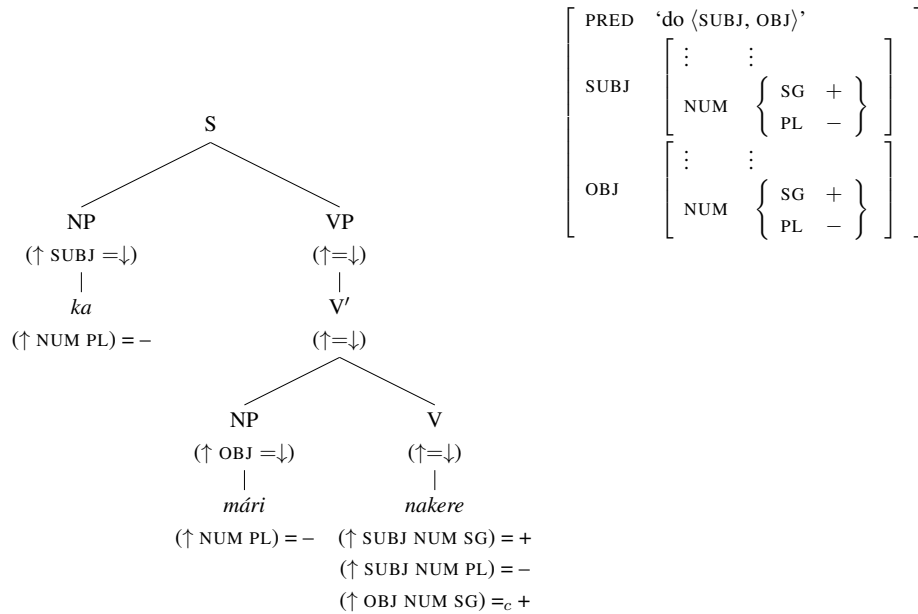
Sentence (23) is ungrammatical as expected, as the inflected verb *dígwatmuli* carries both [+BOUNDED] and [-BOUNDED] features.

- (23) **ka dígwatmu- li*
 1SG.A haul.in.fish.VSG- PRS.IPFV
 (Intended) ‘I am hauling in a couple of fish’



Sentence (24) is grammatical as expected: the VPL form of the verb is unspecified for [BOUNDED] and so there are no feature clashes.

- (24) *ka mári na- ker- e*
 1SG.A 2SG.O FUT.1+1/2.SG.O- do.VPL- FUT.1
 ‘I will fuck you’



6 Conclusions

In conclusion, verb stem alternations in Meryam Mir behave in line with the description of verbal number provided by Durie (1986). However, using verbal number in an account of the language requires distinction of the number features that underlie argument and verbal number marking.

It is possible to generate the observed argument number patterns by adding the feature [\pm GROUP] to features used in LFG accounts of other languages. However, verbal number patterns require other features. One possibility is a feature [\pm BOUNDED], which signals a change in the type of event denoted by a verb. However, the size of the currently-available corpus does not allow for full testing. Accounting for other verbal number phenomena not treated in this paper is likely to require further features to be proposed.

References

- Agrell, Sigurd. 1908. *Aspektänderung und Aktionsartbildung beim polnischen Zeitworte: Ein Beitrag zum Studium der indogermanischen Präverbia und ihrer Bedeutungsfunktion..* Lund: H. Ohlsson.
- Arka, I Wayan. 2011. Constructive Number Systems in Marori and Beyond. In *Proceedings of the LFG11 Conference*, pages 5–25, Stanford, CA.: CSLI Publications.
- Arka, I Wayan. 2012. Verbal Number, Argument Number, and Plural Events in Marori. In Miriam Butt and Tracy Holloway King (eds.), *Proceedings of LFG12*, pages 23–43, Stanford, CA: CSLI Publications.
- Bresnan, Joan. 2001. *Lexical-functional syntax*, volume 16 of *Blackwell textbooks in linguistics*. Oxford: Blackwell.
- Comrie, Bernard. 1976. *Aspect: An introduction to the study of verbal aspect and related problems*, volume 2. Cambridge University Press.
- Corbett, Greville G. 2000. *Number*. Cambridge University Press.
- Cusic, David Dowell. 1981. *Verbal plurality and aspect*. Ph.D.thesis, Stanford University.
- Dalrymple, Mary. 2001. *Lexical Functional Grammar*. San Diego: Academic Press.
- Dalrymple, Mary and Kaplan, Ronald M. 2000. Feature indeterminacy and feature resolution. *Language* 76(4), 759–798.
- Dalrymple, Mary, King, Tracy Holloway and Sadler, Louisa. 2009. Indeterminacy by underspecification. *Journal of Linguistics* 45(1), 31–68.

- Durie, Mark. 1986. The Grammaticization of Number as a Verbal Category. In *Proceedings of the Twelfth Annual Meeting of the Berkeley Linguistics Society*, pages 355–368, Berkeley, CA: Berkeley Linguistics Society.
- Harbour, Daniel. 2007. *Morphosemantic Number: From Kiowa Noun Classes to UG Number Features*. Dordrecht: Springer.
- Moens, Marc and Steedman, Mark. 1988. Temporal ontology and temporal reference. *Computational Linguistics* 14(2), 15–28.
- Nordlinger, Rachel. 1997. Morphology building syntax: constructive case in Australian languages. In *Proceedings of the LFG97 Conference, San Diego, California.*, CSLI Publications.
- Piper, Nick. 2013. *A sketch grammar of Meryam Mir*. Munich: Lincom Europa.
- Ray, Sidney Herbert. 1907. Linguistics. In Alfred Cort Haddon (ed.), *Reports of the Cambridge Anthropological Expedition to Torres Straits*, volume III, Cambridge University Press.
- Sadler, Louisa. 2011. Indeterminacy, complex features and underspecification. *Morphology* 21(2), 379–417.
- Wood, Esther Jane. 2007. *The semantic typology of pluractionality*. Ph. D.thesis, University of California, Berkeley.