

**VERBAL NUMBER, ARGUMENT NUMBER, AND PLURAL
EVENTS IN MARORI**

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Abstract

This paper discusses number and plurality in the nominal and verbal domains of Marori (isolate, Trans New Guinea). Marori shows evidence that verbal number and argument/nominal number should be distinguished, even though they are integrated in a complex way, with some parallelism in the constructed mode of expressing limited plural (paucal). The complexity of the syntax and semantics of verbal number in relation to argument number, aspect, and other constructions such as reciprocals in this language calls for a sophisticated precise unified analysis. I propose that verbal and nominal number have the same composite number features (+/-SG, +/-PL, and +/-AUG) and demonstrate that their intricacy can be straightforwardly captured within a unification-based LFG framework.

1 Introduction ·

Verbal number is a category of number related to events, reflecting the plurality of events (i.e., the number of times an action/state happens) (Durie 1986; Corbett 2000; Veselinova 2008). Plurality of events can be conceptualised as iterated events involving the same participants or as distributive events involving different participants. Verbal number is very common in the languages of North America, but it also found in South American and Papuan languages (Veselinova 2008). This paper demonstrates that Marori (isolate, Trans New Guinea) has two kinds of verbal number distinct from argument (nominal) number and that verbal number and argument number are integrated into the overall number system in Marori in an intricate way.

Verbs showing verbal number are often suppletive in nature. Mithun (1988: 213) reports the alternation of roots showing the opposition of singular (SG) vs. non-singular (NSG) verbal number in North American languages with intransitive verbs such as ‘sit’ and ‘stand’ (reflecting the number of subject participants) and transitive verbs such as ‘kill’ (reflecting the number of object participants) (equivalent to the distinction between *kill* and *massacre* in English). Verbal number in Marori shows this property, but it will be shown later that verbal number in Marori is not simply an

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alternation that is lexically determined, but also subject to grammatical constraints such as finiteness (section 4.2).

Verbal number should be distinguished from argument number. The latter is related to the number of entities/event participants. Argument number is often realised on the nominal unit of a clause, hence, also called nominal number. Nominal number within an NP is typically associated with the noun head—e.g., *book* vs. *books*, *girl* vs. *girls* in English. There may be number agreement within the NP between the noun and its determiner—e.g., *this girl* vs. *these girls* in English—or agreement within the clause between the subject NP and the verb—e.g., *the girl is ...* vs. *the girls are ...* in English. In short, argument number shows a systematic opposition of participant number possibly realised on the nominal phrase (determiner, pronoun, possessive, and adjective) and on the verb.

The Marori data presented in this paper provides support to what has been noted in the literature: namely, that verbal number, while related to aspect and argument number, should be treated as a distinct independent category (cf. Corbett 2000). The complexity of the syntax and semantics of verbal number and also the parallelism between verbal and argument number in this language calls for a precise unified analysis. I demonstrate that this can be straightforwardly captured within a unification-based LFG framework. I will show that plurality applies to both nominal and verbal domains and that the same mechanism is used, e.g., the same constructed strategy to express paucal in both nominal and verbal number.

The paper is structured as follows: An overview of Marori morphosyntax and nominal number is outlined in section 2, while evidence for two types of verbal number—namely, Actor/Subject verbal number (A-vn) Object and verbal number (O-vn)—is given in section 3. The two relate to different conceptions of event plurality, with A-vn used to express distributive plural. The interplay between verbal number and other grammatical phenomena such as finiteness and reciprocity is discussed in section 4. The important point discussed in this section is the parallelism between argument and verbal number in encoding constructive number. An LFG analysis is outlined in 5, and the conclusion is given in 6.

2 Marori morphosyntax in brief

Marori is a non-configurational verb-final language. Subject and object NPs typically come before the verb, without a fixed order, but they can be scrambled, including appearing after the verb. The predicate unit typically consists of a lexical verb and a light or auxiliary verb. The lexical verb immediately precedes the light/auxiliary verb.

Grammatical relations are encoded by verbal agreement as well as by marking on the argument NPs. In general, A(ctor) receives suffix verbal agreement, whereas U(ndergoer) receives prefix verbal agreement. Free NPs

do not come with a case marking, but definite U NPs may be marked by the =*i* clitic. In a transitive structure, only one =*i* is possible. In a ditransitive structure, =*i* marks the recipient object NP. In an intransitive structure, the sole U NP receives =*i* as in (1)a below. A transitive/intransitive actor never gets marked by =*i*. In short, grammatical relations in Marori are semantically marked: undergoer marking. Below are several examples.¹

(1) Intransitives

- a. *na=i patar yu-nggo-f* b. *efi ramon(*=i) kundo-f*
 1SG=U cold 1SG-AUX-NrPST that woman run.3SG-NrPST
 ‘I suffered from being cold.’ ‘She/the woman ran off.’

(2) Ditransitives

- Nawa tamba Albert=i nji=me-ben bosik sokodu.*
 1SG already Albert=U 3.give=AUX-1NPL.NrPST pig one
 ‘I already gave Albert a pig.’

Nouns are not marked for number. Pronouns and their corresponding pronominal affixes on the verb do show number distinctions, e.g., *na* ‘1SG’ vs. *nie* ‘NSG’ for free pronouns.

Pronominal suffixes are portmanteau forms showing person, number, tense, aspect, and mood information. They can be grouped into two classes as shown in Tables 1 and 2, depending on the aspect they encode in their past tenses: the completive and durative classes.²

	(1a)			(1b)			(1c)		
	IRR/FUT			NrPST (Completive)			RmPST (Completive)		
	1	2	3	1	2	3	1	2	3
SG	<i>-ru</i>	<i>-Ø</i>	<i>-Ø</i>	<i>-ben</i>	<i>-f</i>	<i>-f</i>	<i>-fori</i>	<i>-fi</i>	<i>-fi</i>
DU	<i>-ren</i>	<i>n--Ø</i>	<i>-Ø</i>	<i>-ben</i>	<i>n- -f</i>	<i>-f</i>	<i>-fori</i>	<i>n- -fi</i>	<i>-fi</i>
PL	<i>-men</i>	<i>n-(ri)m</i>	<i>-(ri)m</i>	<i>-freben</i>	<i>n- -(fre)f</i>	<i>(fre)f</i>	<i>-mbrofori</i>	<i>-mbrofi</i>	<i>mbrofi</i>
				<i>-frendu</i>					

Table 1: Class 1 Argument suffixes in Marori

¹ Abbreviations: 1,2,3 (First, Second, Third Person); A (Actor); COMP (Complementiser); DEIC (Deictic); DU (Dual); DUR (Durative); F (Feminine); FUT (future); INT (Intensifier); LOC (Locative); M (Masculine); NF (Non Finite); NrPST (Near Past); NSG (Non Singular); NPL (Non Plural); PRES (Present); RECIP (Reciprocal); REDUP (Reduplication); SG (Singular); U (Undergoer).

² The formatives *-re/-ro/-ri* are, strictly speaking, not part of pronominal argument suffixes but are of Actor verbal number (A-vn, see Figure 1). They are included here to show that they serve to encode the general opposition of underspecified NSG vs. PL.

	(2a)			(2b)			(2c)		
	REAL/MacroPRES (Completive/extended)			NrPST (Durative)			RmPST (Durative)		
	1	2	3	1	2	3	1	2	3
SG	-du	-Ø	-Ø	-men	-m	-m	-maf	-maf	-maf
DU	-den	n-Ø	-Ø	-men	n- -m	-m	-maf	n- -maf	-maf
PL	-men	n--Ø	-Ø	-ben	n- -b/-m	-b/-im	-baf	n- -baf	-baf

Table 2: Class 2 Argument suffixes in Marori

3 Two types of verbal number

3.1 Marori verbal template

The verbal template in Marori showing two kinds of verbal number, called O- and A- verbal number for simplicity, is shown in Figure 1. The O-verbal number (O-vn) shows alternate forms expressing plurality of events due to the plurality of transitive objects³ or the plurality of the intransitive subjects (typically, but not restricted to, patientive or unaccusative verbs). O-vn is encoded by suppletive root alternations: e.g., *nde* ‘bring.SG.O’ vs. *kei* ‘bring.PIO’, *mara* ‘fly.SG’ vs. *merfe-* ‘fly.PL’. The A-verbal number (A-vn) expresses plural distributive events associated with the plurality of transitive/intransitive subject A/S.⁴ It is marked by *-ro* (and its variants *-ri*, *-re*, *-ra*), occupying the position immediately after the verbal root.

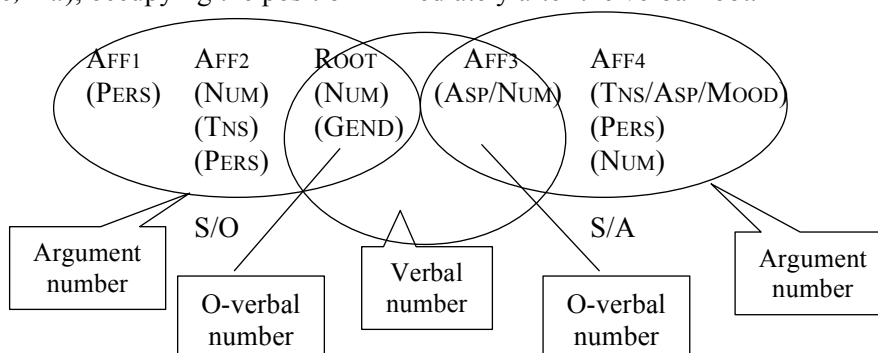


Figure 1

³ Note that the case of plural objects in a single event is possible, e.g., with the verb *kei* ‘bring.PIO’, i.e., a ‘carrying’ situation where a single actor carries plural objects in one go.

⁴ The morpheme *-ro* cannot be simply labeled as a distributive marker, because it is also used to mark the durative/progressive aspect. Marking both the durative aspect and distributive plural is a common function associated with verbal number.

The template also shows slots associated with argument number. The prefix encodes S/O agreement, whereas the suffix encodes S/A agreement.⁵ The circles indicate that number information is distributed across different exponents with overlapping space.

The intricacies of how argument number and verbal number interact will be described in the subsequent sections.

3.2 Argument number vs. verbal number

Verbal number and argument number—while intertwined, as seen from Figure 1—are distinct categories in Marori. The evidence comes from the fact that the two are encoded differently and that they serve different functions in the grammar.

3.3 Different coding

In terms of formal coding, argument number is realised by distinct agreement affixes, depending on the grammatical functions of the arguments. The suffixes mark S/A arguments and consist of two classes, as shown in Table 1 and Table 2. The S/A agreement suffixes carry complex agreement information (person and TAM).

The prefixes mark and agree with S/O arguments. They are *y-* ‘1’, *k-* ‘2’, and *Ø-* ‘3’. They may come with additional formatives expressing other information such as tense and number, e.g., *y-ar-* ‘1-1/2.NSG.PST’.

O-verbal number is realised by suppletive alternates exemplified in (3). Certain adjectival stative predicates form their NPL vs. PL number opposition by *-on* and *nde*, exemplified in (4). These two may appear together in a clause with the regular plural A-vn morpheme *-ro* (or *-re/-ri/-ra*), exemplified by *bring* in (5).

- (3) Suppletive roots expressing O-verbal number
- | | | | | |
|----------------|--------------|-----|----------------|--------------|
| <i>nde</i> | ‘bring.SG.O’ | vs. | <i>kei</i> | ‘bring.PL.O’ |
| <i>tr</i> | ‘hit.NPL.O’ | vs. | <i>ksw</i> | ‘hit.PL.O’ |
| <i>kunonjo</i> | ‘go.NPL’ | vs. | <i>kurfenj</i> | ‘go.PL’ |
| <i>anep</i> | ‘big.SG’ | vs. | <i>kofe</i> | ‘big.NSG’ |

- (4) Verbal number: stative predicates
- | | SG/NPL | PL |
|---------|--------------------|---------------------|
| ‘red’ | <i>paraw-on</i> | <i>paraw-nde</i> |
| ‘short’ | <i>sor-on</i> | <i>sor-nde</i> |
| ‘tall’ | <i>nggworow-on</i> | <i>nggworow-nde</i> |

⁵ The abbreviations S, A, and O follow the tradition in typological linguistics: S (intransitive subject), A (transitive subject), and O (transitive object).

(5) Verbal number *bring*

		O-vn:	
		SG.O	NSG.O
A-vn	NPL: SG	<i>nde</i>	<i>kei</i>
	DU	<i>nde</i>	<i>kei</i>
	PL	<i>nde-re</i>	<i>kei-re</i>

The following are worth noting in terms of coding and status of number categories. First, the two kinds of verbal number (O-vn and A-vn) are clearly distinct because they cross-cut the verbal number space, as exemplified by the formation of the verb *bring* in (5). The two give rise to cases showing plural A-vn with singular objects and plural A-vn with plural objects. That is, distributivity/plurality for the subject is independent from plurality for the object.

Second, the verbal template shows that the A-vn formative *-ro* occupies a slot different from the slot of the S/A argument number morpheme. *-ro* is adjacent to the verbal root, whereas the S/A morpheme is in the outermost position. A deictic morpheme *-n* can intervene between the A-vn and the S/A argument number suffix, as seen in the following example.⁶

- (6) *kurfenj-re-n-du*
return.PL-PL-DEIC-1PRES
'We (three or more) return here.'

Third, as seen in (4), adjectives also show alternates to encode event plurality. The adjectives can be predicative, e.g., *soron/sorde*, as seen in (7). The predicative part is structurally distinct from the verbal part (with its own verbal number, e.g., *-re*). Thus, the term *predicative number* is perhaps better than the term *verbal number*, as such number opposition does not solely apply to the verbal part of the predicate. In addition, the term *predicate number* is appropriate if we want to highlight the two kinds of numbers, contrasting them with the other kind of number, namely, argument number.⁷

- (7) a. *Na tanamba sor-on to-mbo-du*
1SG now short-NPL be-NPL-1SG.PRES
'I am short now.'
- b. *Nie yanadu tanamba sor-on to-mbo-den*
1NSG two now short-NPL be-NPL-1DU.PRES
'We (2) are short now.'

⁶ The distributive plural event marked by *-ro* can be simultaneous or not.

⁷ It appears that a state involving a single participant with a stative predicate such as *short* is counted as one event in this language. Hence, plural participants/subjects are necessarily associated with plural states/events.

- c. *Nie usindu tanamba sor-de te-re-men*
 1NSG all now short be-PL-1PL.PRES
 ‘We (2<) are all short now.’

Fourth, while encoded by affixation, the adjectival number shown in (4) is also lexically determined. That is, only certain adjectives allow the alternation.⁸ This lexical constraint makes the adjectival number alternation similar to that of the O-vn. Hence, the adjectival number in (4) can be classified as O-vn. That is, it is associated with the lexical predicate, as is the case with other (suppletive) O-vn in (3), distinct from the A-vn (-ro).

In addition, the predicate is stative, with the sole argument being O-like. At first, it may not be immediately clear whether *-de* is a verbal number suffix. However, given the overall system of the grammar in Marori where argument number agreement only occurs in the verbal auxiliary part of the verb complex, then the PL suffix *-de* must be analysed as predicative/verbal number marking, rather than argument number. In addition, as mentioned earlier, its encoding is lexically determined. This is a typical property of predicative/verbal number. Argument number is, in contrast, typically part of a highly regular inflectional system, although there may be a number of irregular plural verbs.

Finally, in larger syntax, the predicative number must respect (verbal/argument) number agreement with the auxiliary. Thus, the plural *sorde* must appear with plural verbal number and argument number, as seen in (7)c.

3.3.1 Different but intertwined functions

Verbal and argument number serve different functions in the grammar.

Grammatically, argument number on the verb is part of transitivity and the agreement mechanism, tracking participant roles, e.g., Actor-Undergoer identification. Verbal number, in contrast, is not directly part of the argument-tracking mechanism. It is part of an event-tracking mechanism, where event conceptions such as repetitive, durative, and distributive are relevant. Thus, it is grammatically related to the TAM system.

However, complexity arises due to the fact that the relevant information associated with verbal and argument number in Marori is distributed across different typically portmanteau morphemes. The verbal suffixes *-m* vs. *-f*, for example, are argument agreement suffixes, but they also carry aspect and tense information relevant for the eventualities.

Both verbal number and argument number encode plurality. Argument number expresses an aggregate of three or more entities essentially within the

⁸ It remains to be investigated whether the affixation depends on certain semantic properties such as lexical aspect.

nominal domain.⁹ It is also encoded on the verb due to grammatical verbal agreement. In contrast, plurality in verbal number expresses a complex concept of aggregate eventualities, where event multiplicity/distribution and aspectual properties such as punctuality vs. non-punctuality are important.

Evidence that verbal and argument number have different functions comes from the fact that the plural verbal marker does not impose plural argument agreement. Example (8)a shows the verbal number *-ra* with a singular argument. *-ra* expresses extended aspect. The absence of it in (8)b signifies a non-extended event. Both are past events. The first highlights the duration (of the whole day), whereas the second highlights the point at which that event had already been completed from the moment of speaking.

- (8) a. *Fis na=i kara yu-ngg-ra-m*
 yesterday 1SG=U sick 1SG-AUX-PL.NrPST.DUR
 ‘I was sick yesterday.’
- b. *na-i patar yu-nggo-f*
 1SG=U cold 1SG-AUX-NrPST.NonDUR
 ‘I suffered from a cold.’

Verbal number and argument number are intertwined. As seen in (8), the presence and absence of *-ra* may trigger different argument suffixes, *-m* ‘DUR’ and *-f* ‘NonDUR’. (These are always correlated in this way when *-ra* expresses durative aspect.) In addition, for certain types of verbs, there is also a requirement that both verbal and argument number must have the same value. Thus, the intransitive verb *return* (here), which has the alternates *kurfenj-* (PL) and *kunonjo-* (SG) in Marori must have the plural A-vn marker *-re* when the sole subject argument is plural, as in (9)a. The A-vn *-re* is absent for singular or dual subjects, as seen in (9)b.

- (9) a. *kurfenj-re-n-du* b. *kunonjo-n-du*
 return.PL-PL.ACT-DEIC-1PRES return.NPL-DEIC-1PRES
 ‘We (three or more) return here.’ ‘I or we (2) return here.’

For other eventualities, however, there is no such requirement. The transitive verb *hit*, for instance, has alternates showing object number distinction: *trm* ‘hit.NPL.O’ vs. *kswm* ‘hit.PL.O’. With this verb, plural verbal number can be used to encode progressive aspect, in which case no plural object is required. This has to mean multiple hitting events. Thus, the plural O-vn form *kswm* can take a singular object, as seen in example (10)b. As the translation shows, the verb is aspectually extended (iterative,

⁹ This meaning of plural in Marori is independent of the coding of number, which shows a three-way marking for the first person but a two-way marking for the second and third person.

progressive). Note that the argument suffix must also be synchronized for this, *-m* in (10)b but *-f* in (10)a.

- (10) a. *Tomas Jon-i ter=me-f (sokodu/yanadu ngge)*
 Thomas John=U hit.SG-AUX.2/3 one/two times
 ‘Thomas hit John (once or twice).’ (now or yesterday)
- b. *Tomas Jon-i keswe=mi-m (nggujen ngge)*
 Thomas John=U hit.PL-AUX.M-2/3NrPST.DUR(several times)
 ‘Thomas hit John several/many times’, or ‘Thomas was hitting John.’

3.4 Event plurality and extended aspect

It has been discussed in the literature that the number of objects measures out the aspectuality of transitive verbs (Tenny 1992, 1994), e.g., *built one house* is aspectually bounded, whereas *built houses* is not. In languages like Marori where verbal number is encoded by alternative roots showing the number of objects, it is not surprising that a type of its verbal number, namely, the O-vn, serves as a resource for encoding aspect. The singular O-vn is for completive aspect and the plural O-vn for durative aspect, as seen in (10)a-b. Note that the plural O-vn expressing durative/progressive aspect as in (10)b does not require a plural object.

Of course, the plural O-vn can also appear with a plural object in durative aspect as in (11)a and in non-durative aspect as in (11)b. The two require different argument suffixes: *-m* (durative) vs. *-f* (non-durative). There seems to be no clear difference in meaning between the two other than that the first appears to be more extended than the latter. The grammar of Marori, however, treats them differently in terms of marking.

- (11) a. *Tomas emnde usindu=i kaswa-ma-m*
 Thomas 3NSG all=U hit.PL-AUX.2/3-2/3NrPST.DUR
 ‘Thomas hit them all.’
- b. *Tomas nie yanadu=i kasaw-ri-ma-f*
 Thomas 1NSG two=U hit.PL-1U-AUX.2/3-NrPST.NonDUR
 ‘Thomas hit both of us.’

For intransitive predicates, since there is no Object, the plurality of subject arguments is related to the plurality of events. Hence, it is not surprising that the same marker, in this case the A-vn morpheme *-ro* (or its variants such as *-ri*), is used to encode extended aspect for intransitive predicates.¹⁰ Thus, with the dynamic root *nggV*, all of the forms (i.e., SG, DU, and PL) for the durative aspect have a variant of *-ro*, as seen in Table 3.

¹⁰ Note that *ri-* in (11)b is the first person plural object prefix *-i* with thematic *r-*.

However, for the non-durative aspect, the A-vn marker *-ro/-ri* only marks the plural events/arguments.

For certain inherently durative intransitive predicates with verbal number such as *sit* whose forms are *kuye-* ‘sit.NPL’ vs. *minggri-* ‘sit.PL’¹¹ (Present/Near Past), both the singular and plural verbal forms are used in durative aspect, as seen in (12). Because of this, both verbs must appear with the durative suffix *-m*.

(12) a. *John ndu fis kuye-m keke*
 John INT yesterday sit.NPL-NrPST.DUR here
 ‘Only John sat here yesterday.’

b. *Usin purfam=ndu fis keke minggri-m*
 all person=INT yesterday here sit-NrPST.DUR
 ‘All persons sat here yesterday.’

To conclude, verbal number and aspect are related. Plural verbal number is naturally used for durative aspect. However, the verbal number and aspect are distinct categories in the grammar. There is no one-to-one correlation: e.g., singular verbal number can be also durative, as in (12)a, or plural verbal number can also be non-durative, e.g., *kei-fre-f* ‘bring.PLO-PL-PST.NonDUR’.

3.5 Distributive plural

The notion of distributive plural (also called ‘pluractional’) expressed by the A-vn is important to note. Plural A-vn signifies multiple occurrences of events simultaneously or in overlapping temporal/spatial points by different Actor participants grammatically A/S in Marori. For example, the plural A-vn verb of *hitting* in Marori means hittings by three or more agents (typically simultaneously), irrespective of whether the object is singular or plural. If the multiple hittings are done by a non-plural agent (one or two), then the plurality of hitting is not conceptualised as distributive. In such a situation, the plural event is expressed by plural O-vn only, without plural A-vn. Before examining this point further, let us look first at the distribution of the A-vn.

The A-vn formative *-ro* shows a rather complex distribution, depending on the transitivity of the verb, tense-aspectuality (durative or non-durative, past or non-past), and the number of the object if the verb is transitive. In Marori, the aspectual type of a predicate determines the selection of the light verb or auxiliary that it can co-occur with. In what

¹¹ The plural verb itself, namely, *minggri*, in fact consists of three formatives *mi-*, *ngg-*, and *ri-*, with *-ri* being plural A-vn. The plural verb is formed by the stacking of formatives. This appears to be common in Marori

follows, we discuss distributive plural in intransitive predicates first, followed by distributive plural in transitive predicates.

Intransitive inchoative/action predicates take the auxiliary root *nggV* (IRR or REAL (PRES/PST)), whereas states take different auxiliary roots, depending on whether they are static or dynamic. If static, *te* ‘NonPST’ is used. If dynamic, related to positional posture, *mi* ‘IRR/FUT’ or *kuye* ‘REAL’ is used.

For simplicity, let us consider the A-vn *-ro* and its variants (*-ra/ri*) when they appear with *ngg* for the dynamic/inchoative predicates. This is shown in Table 3, but for the third person only. As noted, *-ro/-ra/-ri* are present in forms showing durative aspect (past or present), i.e., including non-plural arguments. In the non-durative aspect (shown in the last two columns), the plural A-vn *-ro/-ra/-ri* only occurs with plural argument number. In other words, distributive plurals are only possible when plural (S) participants are involved.

	REALIS: Extended Aspect			REALIS: NonDUR Aspect	IRR
	R.PST	Nr.PAST	PRES	PST: -f RPST: -fi	FUT
3sM	<i>ngg(u)-ri-maf</i>	<i>nggu-ri-m</i>	<i>nggu-ri</i>	<i>nggu-f</i>	<i>nggu</i>
F	<i>nggo-ra-mof</i>	<i>nggo-ra-m</i>	<i>nggo-ra</i>	<i>nggwo-f</i>	<i>nggwo</i>
DU	<i>nggo-ra-mof</i>	<i>nggwa-ra-m</i>	<i>nggo-ra</i>	<i>nggwo-f</i>	<i>nggwo</i>
PL	<i>nggo-ra-bof</i>	<i>nggo-ra-b</i>	<i>nggo-ro</i>	<i>nggorfo-ro-f</i>	<i>nggu-ri-m</i>

Table 3

The same holds for transitive predicates: distributive plural events encoded by the plural A-vn *-re* are possible with plural subjects. The verb *bring* in (5), for example, can have plural events with singular or plural O-vn roots: *nde-re* and *kei-re*. The plural verbal forms must have a plural argument suffix, however, e.g., *-men*, as exemplified in (13)a. When *-re* is absent, as in (13)b, the event might be construable as plural but not distributive, e.g., a situation where the bringing of plural coconuts is a shared action.

- (13) a. *nie usindu sajer-sajer sokodu poyo=i*
 1NSG all day-REDUP one coconut=U
nde-re-men pambe
 bring.SG.O-PL-1PL.PRES there
 ‘We all (three or more), each of us, every day bring one coconut there.’

- b. *nie usindu pa keyi-men pambe poyo=i.*
 1NSG all FUT bring.NSG.O-1PL.PRES there coconut=U
 ‘We all (three or more) will bring the coconuts (>1) there.’

The notion of distributive plural events must include three or more events. Two events are not counted as distributive plural in Marori, in spite of the plurality of objects involved, as seen in (14)b where A-vn *-re* is not possible with a dual subject. A plural subject would require *-re* (i.e., *keif-re-f*).

- (14) *Emnde yanadu poyo=i kei-f nggambe*
 3NSG two coconut=U bring.PL.O -2/3NrPST there
 ‘They (2) brought coconuts there.’

Likewise, completive hittings (with a singular object) by two people assumed to be two events do not constitute a distributive plural, as seen in (15)a. In contrast, hitting by a few people does constitute a plural distributive event, in which case the plural A-vn marker *-re* is used, as in (15)b. (Note that *yanadu* glossed ‘two’ in (15)b is used in constructed paucal number.)

- (15) a. *Yanadu purfam=ndu tembok=i ter-me-f*
 two person=FOC wall=U hit.SG-AUX-NonDUR.NrPST
 ‘Only the two people hit the wall.’
 b. *Yanadu purfam=ndu tembok=i ter-mbe-re-f*
 two person=FOC wall=U hit.SG-AUX-PL-NonDUR.NrPST
 ‘Only a few people hit the wall.’

However, two actors can trigger a distributive plural meaning when the events involve at least two objects (i.e., giving rise to a total of more than three events). For example, the verb root *kick* showing no O-vn can take the A-vn *-ra* in a situation involving a dual subject with a dual (or plural) object:

- (16) *Nie yanadu turpungg-ra-bon emnde yanadu=i*
 1NSG two kick-PL-1NrPST.NDUR 3NSG two=U
 ‘We two kicked them two.’

Of course, a singular actor can trigger a distributive plural meaning in individuated (i.e., telic/punctual) events involving plural objects:

- (17) *Na emnde usindu=i turpungg-ra-bon fis*
 1SG 3NSG all=U kick-PL-1NrPST.NPL.NDUR yesterday
 ‘I kicked them all yesterday.’

To conclude, distributive plural must include multiple events. Distributive events marked by the A-vn morpheme *-ro* can be durative or non-durative, requiring a distinct S/A argument suffix (e.g., *-m* vs. *-f*). This serves as evidence that the A-vn morpheme (or the O-vn) is not an aspect marker and that verbal number and aspect are two distinct categories.

4 Verbal number and its interaction in the grammar

4.1 Plurality and parallelism between verbal and argument number

There is interesting parallelism between argument and verbal number in terms of the plural meaning and coding, especially for the constructed paucal, as well as number reference in negation.

As discussed in the preceding section, plural in Marori means ‘three or more’. In the nominal domain, the argument number agreement dictates that an argument NP referring to ‘three or more’ must be encoded by plural agreement. The referent of ‘two’ must have either dual agreement or non-plural agreement with the verb, never plural agreement.

Likewise, in the verbal domain, events taking place ‘three times or more’ are encoded by the plural verbal number. This has been exemplified with the verbs *hit* and *kick* in their distributive plural meanings in the preceding section. The following show that repetitive events occurring ‘twice’ with a singular actor cannot take the plural A-vn *-ri*, whereas events occurring several times can.

- (18) a. *Albert yanadu ngge=du turpengge-f John=i fis*
 Albert two times=INT kick.3M-3NDUR John=U yesterday
 ‘Albert kicked John only two times yesterday.’
- b. *Albert turpengg-ri-m John=i nggunjendumba fis*
 Albertkick.3M-PL-3DUR John=U several yesterday
 ‘Albert kicked John several times yesterday.’

Constructed number in the expression of paucal is observed in both verbal and nominal domains by means of the same strategy. In both domains, the constructed paucal ‘several, few’ is achieved by constructively augmenting *yanadu* ‘two’ by plural verbal number on the verb. The constructed number in the nominal domain is exemplified by (15)b. Note that without the plural verbal morphology, the argument number is dual, as seen in (15)a.

The same augmentation strategy holds in the verbal domain to mean ‘several, few’ events. Thus, *yanadu ngge* is not augmented in (19)a when it comes with the verb without the plural *-ri*. It means ‘two times’. The same adverbial *yanadu ngge* is augmented to mean ‘few/several times’ (i.e., necessarily three or more times) when it comes with the plural *-ri* (19)b.

- (19)a. *Thomas fek yanadu ngge nggu-f*
 Thomas nod two time AUX-2/3NrPST.NonDUR
 ‘Thomas nodded two times.’
- b. *Thomas fek yanadu ngge nggu-ri-m*
 Thomas nod two times AUX-PL-2/3NrPST.DUR
 ‘Thomas nodded a few/several times.’

4.2 Verbal number and finiteness

There is no verbal number distinction in Marori non-finite clauses. The non-finite verb is typically a morphologically invariant form. Verbs that show O-vn may have distinct finite forms. For example, the finite O-vn forms for *bring* are *nde* ‘SG.O’ and *kei* ‘NSG.O’, whereas the non-finite form is *ndow*. The finite forms for *come* are *umo* and *ya* (IRR)/*seri* (REAL), whereas the non-finite form is *embiw*. The A-vn suffix *-ro* is also absent in the non-finite form.

Examples showing non-finite invariant forms of *bring* are given in (20).

- (20)a. *Na Maria=i tirfo=nggo-bon*
 1SG Maria=U ask.SG-AUX-1SG.NrPST
 [*sokodu buku ndow mbe*]
 one book bring.NF MBE
 ‘I asked Maria to bring one book.’
- b. *Na maria=i tirfo=nggo-bon*
 1SG Maria=U ask.SG-AUX-1SG.NrPST
 [*usin buku ndow mbe*]
 many book bring.NF MBE
 ‘I asked Maria to bring many books.’

The invariant non-finite forms without the A-vn *-ro* in Marori suggests that verbal number alternation in Marori is grammatically constrained. It is not purely lexical of the English type *kill* vs. *massacre*.

4.3 Verbal number and reciprocal

Reciprocals in Marori are expressed by the affix *-n-*. It is affixed/infixes (phonologically conditioned) to a verb with non-singular O-vn, as expected, since the reciprocal is necessarily conceived as more than one object.

For example, for the verb *hit*, the reciprocal verb takes the non-singular O-vn root *ksw-*. Consider (21)a with the plural A-vn *-ro* and (21)b without it.

The first one signifies distributive reciprocals (i.e., more than one pair involved), whereas the second means only one pair is involved.

- (21)a. *Ka=yoyo! Emnde usindu koswo-n-mb-ro-∅*
 2=see 3NSG all hit.PL-RECIP-AUX.PL.O-PL-3
 ‘Look. They all (>2) are hitting each other.’
- b. *Ka=yoyo! Emnde yanadu kaswa-n-ma-∅*
 2=see 3NSG two hit.PL-RECIP-AUX.NPL.O-3
 ‘Look. They (2) are hitting each other.’

Non-finite reciprocal clauses have their verbs marked by the reciprocal marker *-n-*, but both the A-vn morpheme *-ro* and the argument agreement suffix are absent. Consider (22) where the invariant form with the reciprocal *koswonmow* is used irrespective of whether the argument is dual as in (22)a, or plural as in (22), a third person as in (22)a-b, or a second person as in (22)c.

- (22)a. *Na tir-ngga-bon emde yanadu=i koswo<n>mow mbe*
 1SG ask.NSG-AUX-SG.NrPST 3NPL two=U hit-RECIP-NF COMP
 ‘I asked them two to hit each other.’
- b. *Anton kie usindu=i tir-ngga-f¹² koswo<n>mow mbe*
 Anton 2NSGtwo=U ask.NSG-AUX-PST-3 hit<RECIP>NF COMP
 ‘Anton asked them all to hit each other.’
- c. *Anton kie yanadu=i tir-ngga-f koswo<n>mow mbe*
 Anton 2NSGtwo=U ask.NSG-AUX-PST-3 hit<RECIP>NF COMP
 ‘Anton asked you two to hit each other.’

Note that a finite reciprocal verb requires an argument suffix. It is *-∅* for the third person in (21). For the first person, it is *-bon*, as in (23)a (dual, non-distributive without *-ro*) and (23)b (distributive, with *-ro*). In contrast to (23)b, the non-finite distributive reciprocal equivalent in (23)c shows no argument suffix *-bon* and no A-vn *-ro*.

- (23)a. *Na Thomas=fi tafa<n>ja-bon*
 1SG Thomas=and meet<RECIP>-1NrPST
 ‘Thomas and I met (each other).’
 (reciprocal, dual: no A-verbal number morpheme *-ro*)

¹² alternatives: *tiranggraf*, *tiringraf*

- b. *Nie usindu tamba tofo<n>j-ro-bon pasar=ku fis*
 1NSG all already meet.PL<RECIP>-1NrPST market=LOC yesterday
 ‘We all met each other in the market yesterday.’
- c. *John nie usindu=i tirir-ngga-f tofo<n>jow mbe*
 John 1NSG all=U ask.NSG-AUX-NrPST meet.PL<RECIP>NF COMP
 ‘John asked us all to meet each other.’

To conclude, the status of reciprocal and verbal number marking in Marori is not the same. The reciprocal marker is purely morphosemantic in nature, not grammatically constrained by finiteness. In contrast, verbal number (O- or A-vn) marking is morphosyntactic in nature, grammatically constrained by finiteness. In the absence of plural coding, plural meanings in embedded non-finite clauses in both verbal and nominal domains can only be arrived at by means of larger context in relation to the main clause.

5 LFG Analysis

While verbal number and its interaction with argument number within the TAM system in Marori is quite complex, its constraints can be straightforwardly analysed within a unification-based framework such as LFG (Bresnan 2001; Dalrymple 2001). The essence of the analysis is to capture the two kinds of number (argument/nominal and verbal) and their aspectual properties as part of an integrated system in the grammar of Marori.

One of the challenges is how to handle the parallelism between nominal and verbal domains, particularly in capturing constructed number that applies to both domains in the same manner. An outline of the analysis proceeds as follows.

I propose that the relevant NUM features are the same features for both nominal and verbal number. Building on earlier work on argument number in Marori (Arka 2011) and studies on underspecification (Dalrymple and Kaplan 2000; Dalrymple, King, and Sadler 2009; Sadler 2010), I adopt a composite NUM feature analysis, with [+/-SG], [+/-PL], and [+/-AUG], as shown in Table 4. [+/-AUG] (see also Harbour 2007) is to capture the augmentation strategy employed in constructing paucal in Marori and other languages (Arka 2011).

Questions remain as to the precise meaning of these features, the extent of their universality, as well as their locus in LFG’s model of parallel structures. Discussing all of these questions in detail is beyond the scope of this paper. What is clear is that [+PL] in Marori means an aggregate of ‘three or more entities or events’, whereas [-PL] means ‘either one or two entities/events’. [+SG] means ‘a single individuated entity/event’, whereas [-SG] means ‘an aggregate of two or more’. [+AUG] means ‘augmentation of the semantic space of the [SG, PL] number features’. Thus, [-SG, -PL,

$+$ AUG] means ‘augmentation of the semantic space of [$-$ SG, $-$ PL] (i.e., ‘two’), conceptually referring to as ‘few, several, relatively small in number’. In contrast, [$-$ SG, $-$ PL, $-$ AUG] means that there is no augmentation of [$-$ SG, $-$ PL], i.e., precisely ‘two’ (dual).

CATEGORY	FEATURES		
	[$+$ / $-$ SG]	[$+$ / $-$ PL]	[$+$ / $-$ AUG]
SINGULAR	+	-	-
DUAL	-	-	-
LIMITED PLURAL	-	-	+
GENERIC PLURAL	-	+	-
LARGE PLURAL	-	+	+

Table 4: Number features

For simplicity, I assume that these are f -structure features. In Marori, two of these features, namely, the [PL] and [SG] features, are also morphological features available in this language. (I assume lexical integrity where morphological features are part of word-internal information, not visible to syntax.) Thus, the pronominal forms that show a singular vs. non-singular distinction carry [$+$ / $-$ SG] (interpreted as morphological as well as f -str features). The plural A-vn morpheme *-ro* carries the morphological and syntactic [$+$ PL] feature as well as a syntactic feature [$+$ AUG]. This [$+$ AUG] feature is visible in syntax; that is, it can interact with other number features coming from a node outside the verbal unit.

Other relevant features, such as ASPECT and FINITE, should be entered into the system, too. The feature ASP(ECT) captures the aspectual properties of verbal number. (It is a syntactic (f -str) and semantic feature.) The ASP feature has binary values, [$+$ / $-$ DUR]. [$+$ DUR] means durative aspect, whereas [$-$ DUR] means completive or telic aspect. The FINITE feature is to capture the finiteness constraint of verbal number, as discussed in section 4.2.

Morphemes participating in constructions involving argument and verbal number, carry rich relevant information in their entries. The agreement suffixes *-m* ‘2/3.NPL.DUR.NrPST’ and *-f* ‘2/3.NonDUR.NrPST’, for example, can be formulated to have the following entries.

- | | |
|----------------------|----------------------|
| (24) a. <i>-m</i> | b. <i>-f</i> |
| (↑SUBJ NUM PL) = - | (↑ASP DUR) = - |
| (↑SUBJ PERS) = {2 3} | (↑SUBJ PERS) = {2 3} |
| (↑ASP DUR) = + | (↑TNS) = NrPST |
| (↑TNS) = NrPST | |

To account for constructed verbal number, as exemplified in (25), we also need the entry of the A-vn formative *-ri*, which is partially shown in (26).

(25) *Thomas fek yanadu ngge nggu-ri-m*
 Thomas nod two times AUX-PL-2/3NrPST.DUR
 ‘Thomas nodded a few/several times.’

(26) *-ri*
 $\sim(\uparrow\text{OBJ})$
 $\{(\uparrow\text{SUBJ NUM PL})=+\}$
 |
 $(\uparrow\text{SUBJ NUM PL})=- \Rightarrow (\uparrow\text{ASP DUR})=+$
 $(\uparrow\text{SUBJ NUM SG})=+ \Rightarrow (\uparrow\text{SUBJ GEND})=M$
 $(\uparrow\text{SUBJ PERS})=3$
 $\}$
 $(\{\uparrow\text{ADJ} \in \text{SPEC NUM AUG}\}=+ | (\uparrow\text{SUBJ NUM AUG})=+\})$

The entry in (26) says that if *-ri* is in an intransitive structure (i.e., the grammatical function constraint of $\sim(\uparrow\text{OBJ})$), it can take either a plural or non-plural subject. The specifications contain a conditional ‘if then’ rule indicated by the arrow (\Rightarrow), e.g., $(\uparrow\text{SUBJ NUM PL})=- \Rightarrow (\uparrow\text{ASP DUR})=+$ means that *-ri* used with a non-plural subject triggers a durative interpretation. It optionally carries an augmented feature: [AUG +] associated with either an ADJ(unct) or SUBJ path. This allows it to interact with other features in the unification process, e.g., with *yanadu* ‘two’ to create an augmented constructed ‘paucal’ number. The augmentation can be captured as follows.¹³

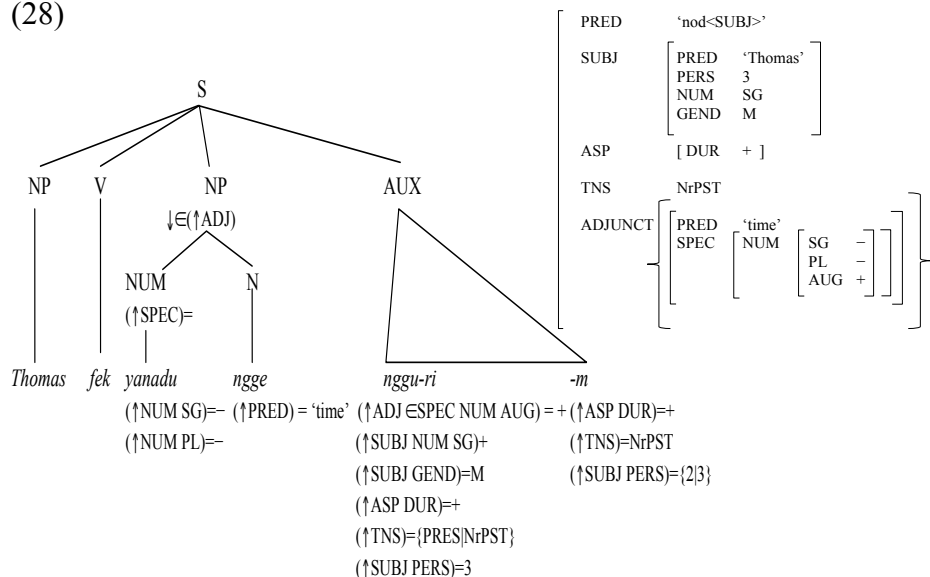
(27) Augmentation:

<i>yanadu</i>		<i>-ri</i>		‘few, several’
[-SG, -PL]	U	[+AUG]	=	[-SG, -PL, +AUG]

The c-structure and f-structure of sentence (25) showing constructed paucal verbal number can be shown in (28).

¹³ Note that I analyse the augmentation as belonging to *f*-str, i.e., the relevant features come from separate nodes, an NP argument/adjunct, and predicate head, in syntax. However, constructed number (dual, but not paucal) is also possible word-internally in Marori. It remains debatable whether it is desirable to have a different analysis of the constructed number, e.g., with underspecified semantic analysis without syntactic ambiguity as proposed in this paper. I leave this for future research.

(28)



Since the subject is singular, then the plural A-vn *-ri* is associated with durative aspect (i.e., due to the conditional rule of *-ri*). The durative aspect then requires the durative argument suffix *-m*, carrying (↑ASP DUR)=+. Given the c-str annotation of the adjunct NP *yanadu ngge*, the relevant number features of *yanadu* (↑NUM SG)=-, (↑NUM PL)=- end up as the values of ADJUNCT and therefore unify correctly with the feature (↑ADJ SPEC NUM AUG) = + of *-ri* in the same ADJUNCT path. This results in the intended reading, namely, paucal in relation to the verbal number: 'few occurrences of the event of nodding'.

6 Conclusion

This paper has discussed how verbal number and argument number are distinguished in Marori as well as how they interact with each other and with other grammatical phenomena such as aspect, finiteness, and reciprocals. Two kinds of verbal number in Marori, the O-vn and A-vn, can be distinguished. The O-vn shows suppletive alternations with the verbal roots and morphological alternation with *-on/-nde* with adjective roots. The A-vn is morphologically encoded by *-ro* (and its variants). The A-vn is used to encode distributive plural showing multiple events, involving multiple actors, and/or multiple objects. It is also used to express aspectually extended/durative events. Aspect (and also tense) and number information is also carried by the argument suffix. Verbal number alternations, therefore, impose a co-occurrence constraint on argument suffixes: e.g., plural O-vn/A-vn encoding durative aspect must have a durative subject argument suffix.

This compatible requirement can be easily captured in LFG's unification-based architecture. It has also been demonstrated in this paper that more complex issues of number in this language, including the parallelism between verbal and nominal domains in paucal, can be straightforwardly captured in LFG. There remain theoretical and empirical issues, however. Theoretically, the precise nature and analysis of number features remain to be worked out: to what extent the features are morphological, syntactic, and semantic. Empirically, more research is needed to map out the variation in number systems across languages, in particular in the meaning of plural.

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