

NAIROBI EVANGELICAL GRADUATE SCHOOL
OF THEOLOGY

MORO VERB MORPHOLOGY.

BY
TIMOTHY DAVID BARNARD

*A Linguistic Project Submitted To The Graduate School
in Partial Fulfillment of the Requirements for the
Degree of Master of Arts in Translation Studies*

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2008

JULY, 2008

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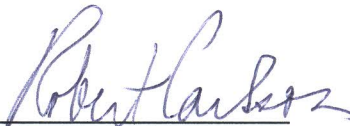
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Approved:

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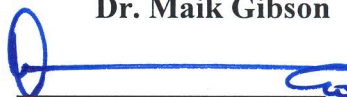
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Student's Declaration

MORO VERB MORPHOLOGY

I declare that this is my original work and has not been submitted to any other College or University for academic credit.

The views presented herein are not necessarily those of the Nairobi Evangelical Graduate School of Theology or the Examiners.

(Signed)



Timothy David Barnard

July, 2008

ABSTRACT

This paper describes and analyses many features of both the inflectional and the derivational verb morphology of Moro, a Kordofanian language spoken in the Nuba Mountains of central Sudan. Chapter 1 provides a brief overview of the Moro people and language. Chapter 2 deals with inflectional morphology and focuses on tense and aspect. The complexity of Moro phonology is demonstrated, and the importance of grammatical tone is shown. Chapter 3 uses data from a word list to allow Moro derivational verb morphology to be explored. A probable medio-passive, anti-passive, reciprocal, causative and a benefactive are described. Finally, Chapter 4 looks at the vowel harmony system, drawing on insights from the previous chapters.

To the Moro community

ACKNOWLEDGEMENTS

My heartfelt thanks goes out to Israel Angelo, my friend, fellow student and fluent Moro speaker for the many hours he spent answering my questions and giving me the large amounts of data necessary to write this paper.

I must also thank my readers, Dr. Carlson and Dr. Gibson for their help in carefully reading and constructively criticising my work, as well as Prof. Okombo for offering his services as external reader.

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ABBREVIATIONS

The following abbreviations are used in interlinearised example sentences:

BEN	-	Benefactive
CON	-	Concord or noun class agreement marker
DIST	-	Distal
FUT	-	Future tense marker
HAB	-	Habitual aspect marker
IPFV	-	Imperfective aspect marker
ITT	-	Iterative
LOC	-	Locative
LOG	-	Logophoric pronoun
OBJ	-	Object marker
PASS	-	Passive voice
PFV	-	Perfective aspect marker
PST	-	Past tense marker
RECP	-	Reciprocal
REFL	-	Reflexive
?	-	Morpheme of unknown function (in morpheme description)
?	-	Semantically odd sentence (at the start of the Moro or English)
*	-	Grammatically incorrect sentence

CHAPTER 1

INTRODUCTION

1.1 Overview

This paper describes the verbal morphology of Moro, a language of Sudan spoken in the Umdorein District of the Southern Kordofan Province (historically known as the Nuba Mountains). The first major section concerns inflectional operations including subject agreement with nouns and pronouns as well as tense and aspect marked both morphologically and using auxiliary verbs. The second section focuses on derivational operations and identifies a number of different valence adjusting operations. The final section analyses the system of vowel harmony in the light of the insights gained concerning the structure of the Moro verb.

It is unknown how many speakers of the language there are today. The Ethnologue gives a figure of 30,000 from 1982 (Gordon 2005), but since then civil war has resulted in the deaths or displacement of large numbers of Nuba people.

There are seven Moro dialects – Layenia, Tobəɟelda, Uləba, Lənəbwa, Ndërria, Ləmwarəŋ and Ləŋorəban (Blench 2005). The latter is the language of the New Testament, but this paper describes the Tobəɟelda dialect.

1.2 Kordofanian

Moro is a Kordofanian language that is classified in the Ethnologue as Niger-Congo, Kordofanian, Heiban, West-Central, Western. Figure 1 (overleaf) shows the location

The Kordofanian group comprises about 24 languages divided into four main groups with a considerable linguistic distance between them. Kordofanian languages have benefited from little linguistic study and there are still many questions as to how they relate to other Niger-Congo groups and even whether they really belong to the Niger-Congo family at all. Schadeberg points out that three of the Kordofanian sub-groups have noun class systems that are typical of Niger-Congo languages and argues that it is highly unusual for complete noun class systems to be borrowed (Schadeberg 1989, 76-79). Blench more recently reviewed data from multiple sources and concluded from looking at phonology, noun class systems and lexical items that there is very little evidence that Kordofanian languages developed from proto-Niger-Congo (Blench 2004).

1.3 Prior Work

Of the Kordofanian languages, Moro is probably the best researched. A missionary couple translated the New Testament and also produced a grammar and dictionary of the language (Black & Black 1971). Unfortunately, this is currently unavailable in Kenya. Schadeberg carried out a survey of Kordofanian languages including Moro and published brief information including a description of the noun class system (Schadeberg 1981). In 1997-1998 a volunteer worker, Elizabeth Guest produced a series of notes on Moro for the Moro Literacy Committee. More recently, Blench has published a word list for Moro containing some 1400 words including nearly 400 verbs (Blench 2005). He does not say what dialect the words are from (there appears to be some mixing), but after checking with a native speaker of Moro, it has proved valuable for the present work. Currently there is a team at the University of California who have spent two years studying Moro. They have produced a summary

of the noun class system (Gibbard, Rohde and Rose 2007). They have also circulated for comment a draft paper on Moro tone (Jenks and Rose 2007). Their work is based on the same dialect of Moro as this paper and has provided some useful insights.

1.4 Phonology and Orthography

The table below (adapted from Angelo forthcoming) shows the Moro consonant system. Where the orthography differs from IPA, the orthographical representation has been put in brackets.

Table 1 - Consonant system

	Bilabial	Labio-dental	Dental	Alveolar	Retroflex	Palatal	Velar
Plosives	p		t̪ (t̪)	t		c	k
	b		ɖ (ɖ)	d		ɟ (j)	g
Fricatives		f		s			
			ð				
Nasals	m			n		ɲ (ñ)	ŋ
Flaps and trills				r~r (r)	ɽ		
Lateral approximant				l			
Central approximants						j (y)	w

In the original Moro orthography (used for the New Testament), only five vowels were written. Since then, two extra vowels have been added or proposed - ə and ě. Angelo argues for the necessity of adding these vowels. Blench refers to ě as a ‘stressed schwa of doubtful phonological status’ (Blench 2005). Examination of the

vowel harmony system of Moro in Chapter 4 shows *ë* behaving as part of the system, so it seems probable that this vowel should be written in the orthography. The below table (adapted from Angelo forthcoming), shows the vowel positions. As before, when the orthography differs from IPA, the orthographical representation is in brackets.

Table 2 - Vowel system

	Front		Central		Back	
	unrounded	rounded	unrounded	rounded	unrounded	rounded
Close	i					u
Close-mid	e		ə			o
Open-mid			ɜ (ë)			
Open			ɑ (a)			

For the purposes of this paper, the Moro orthography has been used, rather than IPA.

1.5 Tone

Black, in his grammar, claimed that Moro is not a tonal language, thus tone is not marked in the Moro orthography. Schadeberg (1981) suggested that Moro had two level tones, while Blench (2004, iii) posited three level tones. Jenks and Rose (2007) clearly demonstrated minimal pairs for both lexical tone and grammatical tone using two level tones. For the purposes of this paper, high tone has been marked on the verb as far as possible, while low tone has been left unmarked. In doing so, several instances of important grammatical tone have been identified.

1.6 Methodology

Data for this paper has come from two sources. The primary source is my informant Israel Angelo, who is a fluent mother-tongue speaker of Moro. The secondary source is the word list compiled by Blench. Although it has often required correction due to misspelling or dialectal differences, it has been invaluable in allowing words with particular forms or particular meanings to be obtained quickly. It has also been useful in identifying derivational morphemes, as it contains many verbs that have been derived from other verbs.

Data obtained has been via elicitation, rather than by analysing natural language texts. The main reason for this is that obtaining an adequate corpus of data would be far too costly in terms of time. To try and combat this limitation, data has been elicited using various methods including creating hypothetical situations and then asking my informant to describe them in Moro.

1.7 Basic Verb Characteristics

The simplest form of a Moro verb is the imperative. The imperative does not require any agreement prefixes, and is thus used as the citation form in the dictionary. The imperative can be seen in example (1) and a simple active sentence with a subject and object is shown in example (2). It can also be seen that the basic word order is SVO. Details of the glossing will be explained further in later sections.

- (1) *So*
eat.IPFV
'Eat!'

- (2) *Kaka ga-só acəba*
kaka CON-eat.PFV food
'Kaka ate food'

CHAPTER 2

INFLECTIONAL OPERATIONS

2.1 Agreement

Moro is a language having a complex system of noun classes (or genders). Verbs show agreement with the gender and number of the subject, but not of the object.

This agreement is marked as a prefix on the verb.

Comparing examples (3) and (4) demonstrates the agreement in number. When the subject changes from singular to plural, the concord marker (glossed as CON) changes. Comparing examples (3) and (5) show that changing the subject for one of a different grammatical gender results in a change in the concord marker.

(3) *ɲina* *ɲa-só* *acəba*
dog CON-eat.PFV food
'The dog ate food'

(4) *n̄ina* *n̄a-só* *acəba*
dogs CON-eat.PFV food
'The dogs ate food'

(5) *ǎëuria* *ǎa-só* *acəba*
camel CON-eat.PFV food
'The camel ate food'

Examples (6) to (8) demonstrate that there is no agreement between the verb and the object. Changing either the number of the object or the gender of the object has no effect on the verb.

- (6) *Kuku ga-ɽəñó* *ɲina*
 kuku CON-kill.PFV dog
 ‘Kuku killed a dog’
- (7) *Kuku ga-ɽəñó* *ñina*
 kuku CON-kill.PFV dogs
 ‘Kuku killed dogs’
- (8) *Kuku ga-ɽəñó* *ðëuria*
 kuku CON-kill.PFV camel
 ‘Kuku killed a camel’

The noun class system is one of the areas that has already been thoroughly studied.

The following table and diagram adapted from Gibbard 2007 demonstrate the pairing between the initial prefix on a noun and the associated concord prefixes on the verb as well as the relationships between singular and plural concords.

Table 3 - Main class pairings and single classes (adapted from Gibbard 2007, 2)

Class	Singular			Plural			Gloss
	Initial Segment	Concord Segment	Examples	Initial Segment	Concord Segment	Examples	
g/l	V	g-/k-	evaja uða	l-	l-	ləvaja ləðu	poor person worm
l/ŋ	l-/ɫ-	l-	ləvəra ləbu	ŋ-	ŋ-	ŋəvəra ŋəbu	stick well
l/ñ	l-/ɫ-	l-	laŋwaʔa law	ñ-	ñ-	ñəŋwaʔa ñawa	water cup mosquito
ð/r	ð-	ð-	ðoppa ðappa	r-	r-	roppa rappa	star friend
ð/j	ð-	ð-	ðamala ðara	y-	y-	yamala yara	camel rope
g/n	V	g-/k-	oca emərta	n-	n-	nəca nəmərta	milk pot horse
ŋ/ñ	ŋ-	ŋ-	ŋera ŋusi	ñ-	ñ-	ñera ñusi	girl chick
y/y	low V	y-, k-, s-	ayen əðuna	higher V	y-, s-	eyen iðuna	mountain hearthstone
ŋ	ŋ-	ŋ-	ŋaʔa ŋgara	*	*	*	sap salt
ð	b/p, m, ð	ð-	məgwaʔa ðəbara	*	*	*	peanut cotton
y	V/s	j-, k-, s-	ibəgwa aveya	*	*	*	fog liver
g	V	g-/k-	efea aŋala	*	*	*	sand haze
ð	ð-	ð-	ðawarðəŋ ðudəðəŋ	*	*	*	writing milking

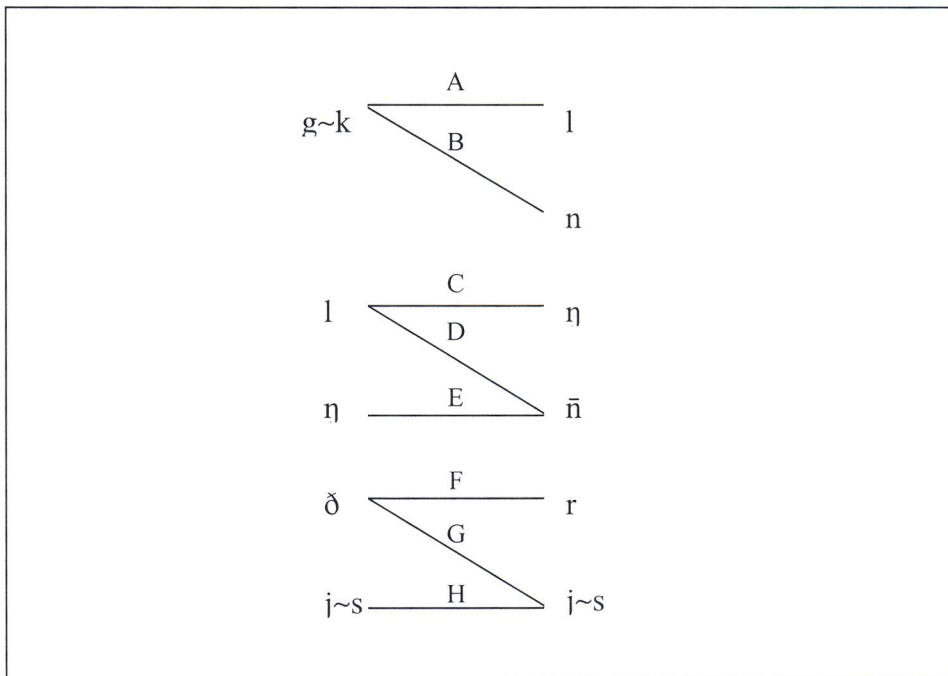


Figure 2 - Concord consonant class pairings (adapted from Gibbard 2007, 3)

2.1.1 Pronoun Agreement

As well as the previously described agreement system for nouns, pronouns also demonstrate agreement with the verb. The table below (partially derived from example sentences in Angelo forthcoming) shows pronouns and their associated concord prefixes on the verb. Note that while every pronoun in the table is unique (except for dual/plural first person exclusive), the concord prefixes show syncretism. This syncretism has been indicated by shading and can be seen to increase as the number moves from singular to plural and even more as it moves to dual. Also notice that the dual pronouns are formed from the plural pronouns by adding *-dəm* in second and third person.

Table 4 - Pronoun concord prefixes

Person	Singular		Plural		Dual	
	Pronoun	Concord	Pronoun	Concord	Pronoun	Concord
1st (incl.)	ñi	ig-	nëndr	lag-	lëləŋ	ləg-
1st (excl.)			nanda	ñag-	nanda	ñag-
2nd	ŋa	ag-	ñanŋ	ñag-	ñanŋdəm	ñag-
3rd (he/she)	ŋu	g-	lëŋŋulu	l-	lëŋŋulndəm	l-
3rd (it)	gëŋŋu	g-	lëŋŋulu	l-	lëŋŋulndəm	l-
3rd (it)	ŋëŋŋu	ŋ-	ñanŋulu	ñ-	ŋulndəm	l-
3rd (it)	rëŋŋu	r-	yëŋŋulu	y-	yëŋŋulndəm	y-
3rd (it)	ðëŋŋu	ð-	yenŋulu	y-	yenŋulndəm	y-

The bottom section of the table shows four examples of logophoric pronouns (for brevity, the rest of the system is not shown). They are used in complement clauses to refer back to another noun. They also match the noun class of the noun that they refer to. In example (9), it is only the context that tells the hearer that the reference in the complement clause refers to Kuku. In (10) and (11), the reference in the second clause must refer to the subject of the main clause.

(9) Kuku ge-tó igi, ŋu g-ameðó
 kuku CON-come.PFV from.farm, he/she CON-tired.PFV
 ‘Kuku came from the farm, he was tired’

(10) Kuku ge-tó igi, gëŋŋu g-ameðó
 kuku CON-come.PFV from.farm, LOG CON-tired.PFV
 ‘Kuku came from the farm, he (Kuku) was tired’

- (11) rəldo ra-baɾa, rənɲu r-ameðó
 goat CON-come.PFV, LOG CON-tired.PFV
 ‘A goat is crying, it (the goat) is tired’

2.1.2 Realisation

Moro does not allow many consonant clusters, so when a concord prefix is added to the root of a verb, if the root is consonant initial, an additional vowel must be inserted. In collected data, this vowel is virtually always *a* as in example (12). When the root starts with a vowel, no additional vowel needs to be inserted as in example (13). As has been mentioned earlier, the imperative form of a verb comprises the root without any concord prefix at all. The fact that imperative forms such as *ro* ‘kick, spear’ and *aro* ‘cry, weep’ exist make it clear that the rule must be one of insertion, rather than deletion.

- (12) g- so (underlying form)
 g- a- só (realisation)
 concord prefix V eat.PFV
 ‘he ate’

- (13) g- erldó (underlying form)
 g- erldó (realisation)
 concord prefix walk.PFV
 ‘he walked’

There are, however, a few examples of verbs that start with a vowel that have the prefix applied differently depending on aspect (aspect is discussed in detail in section 2.2). Note how imperfective aspect in example (15) has resulted in the addition of *ab*. There are many other examples of this same insertion, but other imperfective forms

with vowel initial roots do not show the phenomenon. Further investigation would be needed to determine rules governing this behaviour.

- | | | | |
|------|-----------------|------------|-------------------|
| (14) | g- | ëntú | (underlying form) |
| | g- | ëntú | (realisation) |
| | concord prefix | enter.PFV | |
| | 'he entered | | |
| | | | |
| (15) | g- | ëntia | (underlying form) |
| | g- | ab-ëntia | (realisation) |
| | concord prefix | enter.IPFV | |
| | 'he is entering | | |

A small number of verb roots start with *wu*. In these cases, the *w* is dropped, probably as it is already very vowel-like in quality.

- | | | | |
|------|----------------|----------|-------------------|
| (16) | g- | wurú | (underlying form) |
| | g- | a-urú | (realisation) |
| | concord prefix | walk.PFV | |
| | 'he walked' | | |

For further data and analysis on nouns and noun classes, see Gibbard 2007 and Angelo forthcoming.

2.1.3 Object Pronouns

When a pronoun is required in an object position, it is instead prefixed to the verb between the root and the subject concord prefix, or is suffixed verb finally. Although these affixes look very similar to concord prefixes, they are not showing agreement,

as the affix is itself pronominal and there is no separate realisation of the object.

Examples (17) and (18) show the use of a direct object pronoun, which always is prefixed.

- (17) Kuku ga-p-ua Kaka
 kuku CON-beat.IPFV kaka
 ‘Kuku is beating Kaka’

- (18) Kuku ga-ñə-p-ua
 kuku CON-me-beat-IPFV
 ‘Kuku is beating me’

Examples (19) and (20) show the use of an indirect object pronoun, which is suffixed.

- (19) Kaka ga-maṭó Kuku-ŋ aḏam
 kaka CON-take.PFV kuku-OBJ book
 ‘Kaka took a book from Kuku’

- (20) Kaka ga-miṭəñe Kuku-ŋ aḏam
 kaka CON-take.PFV.me kuku-OBJ book
 ‘Kaka took a book from Kuku for me’

2.2 Aspect

2.2.1 *Perfective and Imperfective*

Comparing examples (21) and (22), it can be seen that the only differences between them is that the final vowel of the root of the verb has changed from *-o* to *-a* and the final tone has changed. Looking at the meaning, it is possible that this final

vowel/tone change is marking some kind of past versus present tense, or that it is marking a perfective versus imperfective aspect.

- (21) \bar{T} im ga-só acəba
 tim CON-eat.PFV food
 ‘Tim ate food’ (i.e. Tim was eating a meal, but finished sometime in the past)

- (22) \bar{T} im ga-sa acəba
 tim CON-eat.IPFV food
 ‘Tim is eating food’ (current activity or habitual)

Tense is deictic, i.e. it sets an event at a point in time relative to another fixed point in time. This point in time is by default usually the time of speaking, but may be another point that has been already setup in the utterance. For example, ‘By next year we will have run out of money’. The expression ‘by next year’ sets up a point in time in the future. Another point relative to this is then referred to.

Aspect is not deictic. Instead, it describes aspects of the internal structure of an event. These include whether it has started or finished and whether it is in process.

Examples (23) and (24) show clearly that the difference marked by the suffix under examination is not one of tense, but one of completion versus ongoing process.

- (23) \bar{T} im ga-ləŋeɾó Helga
 tim CON-know.PFV helga
 ‘Tim knows Helga’

- (24) \bar{T} im ga-ləŋeɾa Helga
 tim CON-know.IPFV helga
 ‘Tim is getting to know Helga’

To give further proof that the suffix is marking aspect, not tense; see examples (25) and (26) below. In both, the speaker is describing a past event. In the first, when the speaker arrived home, the boy had sometime previously finished eating his meal. This could be considered as past tense – i.e. setting a point in time prior to arrival home at which the boy ate his meal.

The situation in the second example, however, can certainly not be interpreted as present tense. At the point that the speaker arrived home, the boy was in the process of eating his meal. The speaker does not know when he started and does not know when he will finish. If the suffix was interpreted as present tense (i.e. setting a point in time concurrent with the arrival home), the sentence would have to be glossed as ‘The boy ate food when I arrived home’. This would imply that the boy started to eat at the moment the speaker walked through the door.

- (25) ummia ga-fo ga-só acəba ŋen igərmaṭo eṛa
 boy CON-PST CON-eat.PFV food when I.arrived home)
 ‘The boy had eaten food when I arrived home’

- (26) ummia ga-fo ga-sa acəba ŋen igərmaṭo eṛa
 boy CON-PST CON-eat.IPFV food when I.arrived home
 ‘The boy was eating when I arrived home’

Further evidence for the interpretation of the suffix as an aspectual marker can be seen when it is applied to a punctual verb such as ‘cough’ in examples (27) and (28). As imperfective aspect relates to a process, it cannot be used with punctual verbs, which have no internal structure. Either this usage is completely prohibited, or else it will trigger an iterative interpretation. This iterative meaning can be seen in (28).

(27) Kuku ga-ṭundú
 kuku CON-cough.PFV
 ‘Kuku coughed’ (a single cough)

(28) Kuku ga-ṭunda
 tim CON-cough.IPFV
 ‘Kuku is coughing’ (repeatedly)

Table 5 below shows examples of verbs with each possible final vowel and how this vowel changes in the imperfective form. All verbs are in the third person singular form.

Table 5 – Perfective and imperfective forms

Perfective		Imperfective	
Verb (3sg)	Gloss	Verb (3sg)	Gloss
gacoñá	he is hungry	gácoña	he is becoming hungry
gajəbá	he doesn't know	gájəba	he is in the process of forgetting
gaťá	he said (s.t.)	gabəťa	he is saying (s.t.)
gamé	he praised (s.b./s.t.)	gamia	he is praising (s.b./s.t.)
gamolé	he made cold (s.t.)	gamolia	he is making cold (s.t.)
gəgrí	he read (s.t.)	gəgria	he is reading (s.t.)
gəncí	he named, put in (s.t.)	gəncia	he is naming/putting in (s.b./s.t.)
garəməcí	he blinded (s.b.)	garəməcia	he is blinding (s.b.)
gasó	he ate (s.t.)	gasa	is eating or eats (s.t.)
galəŋeťó	he knows (s.t./s.b.) / how to do (s.t.)	galəŋeťa	in the process of getting to know somebody or learning something
gawaďó	he sowed/stabbed (s.t.)	gawaďa	he is sowing/stabbing (s.t.)
guŗəďú	he circumcised (s.b.)	guŗəďa	he is circumcising (s.b.)
gaťú	he drank (s.t.)	gaťia	he is drinking (s.t.)
giŗú	he fell	gabŗia	he is falling
gaťundú	he coughed (once)	gaťunda	he is coughing (repeatedly or habitual)
gaburú	he hit (s.t. once)	gaburua	he is hitting (s.t. - i.e. stick is moving, not repeated)

It can clearly be seen that verbs having perfective endings of *-á* and *-ó* have imperfective endings of *-a* while verbs having perfective endings of *-é* and *-í* have imperfective endings of *-ia*. Verbs having perfective endings of *-ú* are interesting in that sometimes the imperfective ending is *-ia* and at other times it is *-a* and occasionally it is *-ua*. The feature that is common between all verbs is the high tone for perfective and the low tone marking imperfective.

Extensive analysis of 94 verbs was carried out to try to determine the rule that governs whether the imperfective suffix for a verb with a final vowel in the imperative form of *-ú* is *-i*, *-ia* or *-ua*.

Comparing the consonant before the suffix showed no pattern, i.e. many consonants appeared both with *-i* suffixes and also with *-ia* suffixes. Comparing the vowel before the consonant also showed no pattern.

An attempt was made to try and remove the verbal extensions so that it would be possible to compare roots in the same way as above (see Chapter 3 for details of these extensions). Again, it was clear that there was no pattern.

Various pairs of verbs were identified that made it very apparent that there would be no easy solution to the problem:

The two verbs *gandəðia* ‘he is coming together’ and *ganduða* ‘he is biting’ are identical except for the penultimate vowel, therefore this vowel alone governs the suffix. However, the verb *guɽəða* ‘he is circumcising’ has the same penultimate vowel as *gandəðia*, but a different suffix. In this case, something other than the penultimate vowel is governing the suffix. These two verbs are very similar in form – they both have citation forms that are three syllables long with an initial vowel (*uɽəðu* and *andəðu*). Sometimes a pair differs by a single vowel, but the suffix remains unchanged, such as *guraɽa* and *gurəɽa*. Another pair differs by a single consonant and has a different suffix (*gura* and *guria*). If there is a phonemic rule governing the suffix, it is clear it must be a very complex one.

Unfortunately, the word list used is not marked for tone. It would be useful to check the tone of all 96 verbs, as it is possible that the rule is tone based (or includes an aspect of tone).

Checking these forms with the verbs on the word list shows that most of the time the above patterns are true. There are a few verbs that use two or more different roots for different tense/aspects. Obviously, these cannot be expected to conform to a pattern. There are two other examples where the perfective final vowel is -*ó*, rather than the expected -*é*.

The table below summarises the final vowels. These final vowels and tone markings are analysed further in 4.3 (together with distal verb forms).

Table 6 - Final vowels

Imperative	Perfective	Imperfective	Future
a	á	a	a (3), iṭi, əṭe, eṭe
e	é (12), ó (2)	ia	e
i	í	ia	i
o	ó	a	e
u	ú	a, ia, ua	i

2.2.2 Iterative

Jenks and Rose attest to a reduplicative verb prefix that appears on verb roots with punctual Aktionsart and signifies continuous or repetitive action. (Jenks and Rose 2007, 37). The examples they give (reproduced below verbatim for reference¹)

¹ In all the data from Jenks and Rose, the third person human concord prefix is consistently written as *k-*, rather than *g-* (as in the collected data). This is odd, as their informant supposedly speaks the same dialect of Moro as mine, and they are in fact cousins!

show the initial consonant of the root repeated with the vowel *a* separating it. Often there is alternation of voicing, i.e. *t* become *d*, *v* becomes *f*, etc. In the example with a vowel initial verb root, the vowel is repeated with the consonant *k* separating.

Notice too that the reduplicated prefix always receives a high tone and the first syllable of the original root always receives a low tone, regardless of whether the first syllable of the original root has high or low tone. Jenks and Rose explain this phenomenon in some detail in their paper.

	Punctual			‘he’s about to...		Durative
a.	<i>ka-ð́ɔw-á</i>	H-H	‘poke’	<i>ka-ð́á-ð́:ɔw-a</i>	H-L-L	‘he’s poking’
b.	<i>ka-t́oð-a</i>	H-L	‘wake up’	<i>ka-d́á-t́:oð-a</i>	H-L-L	‘he’s waking up’
c.	<i>ka-t́ávəð-a</i>	HH-L	‘spit’	<i>ka-d́á-t́:avəð-a</i>	H-LL-L	‘he’s spitting’
d.	<i>ka-kóréð-a</i>	HH-L	‘scratch’	<i>ka-ǵá-k:oreð-a</i>	H-LL-L	‘he’s scratching’
e.	<i>ka-vələéð-a</i>	LH-L	‘pull’	<i>ka-v́á-f:əleð-a</i>	H-LL-L	‘he’s pulling’
f.	<i>k-ogóṭ-ə</i>	LH-L	‘jump’	<i>k-ók:-ogot-a</i>	H-LL-L	‘he’s jumping’
g.	<i>k-á:l-a</i>	H-L	‘slice’	<i>k-ák’-a:l-a</i>	H-L-L	‘he’s slicing’

Collected data demonstrates that reduplication can also be applied to verbs that denote bounded processes and changes of state (i.e. accomplishments and achievements), as well as those denoting punctual events (semelfactives). It also is apparent that the rules governing the reduplication are much more complicated than suggested by the data of Jenks and Rose. Both the complexity and the extra Aktionsart classes can be seen in the table below. For the iterative forms, the inserted or changed phonemes have been highlighted in bold. Notice in particular that the imperative *gákondo* ‘look/search! (repeatedly)’ is identical to *gakondó* ‘he looked/searched (for s.t.)’ except for the tonal differences.

Table 7 - Further iterative examples

Once		Iterative	
<i>giɽu</i>	he fell	<i>giɽtu</i>	he fell (repeatedly)
<i>məɾnu</i>	be changed!	<i>məɾninu</i>	be changed! (repeatedly)
<i>gakondó</i>	he looked/searched (for s.t.)	<i>gákkondo</i>	look/search! (repeatedly)
<i>galəŋeɽó</i>	he knows	<i>galaldəŋeɽó</i>	he knows (repeatedly)
<i>gableðó ðar</i>	he pulled the rope	<i>gababɾideðo rəldo</i>	he pulled the goat (repeatedly, for a long distance)
<i>garldaɽo ŋaca alo</i>	he trampled mud down	<i>garldaðɽo ŋaca alo</i>	he trampled mud down (repeatedly)
<i>gəncú oɽo</i>	he led goats in	<i>garənəcú oɽo</i>	he led goats in (repeatedly)

This is an area that would require large quantities of data and further analysis to allow rules to be discovered.

2.2.3 Distal

In Moro, it is possible to indicate that an event is taking place at a location far from the speaker. Interestingly, there are two very different ways of indicating this; one that is used only with a present imperfective aspect and another that is only used in the future. No way has been identified to morphologically mark that an event took place in the past far from the speaker.

2.2.3.1 Present distal

An auxiliary verb is used. It was not possible to identify the origin of the auxiliary (*tu* actually means ‘drink!’)

- (29) *Kaka* *gë-tu* *ga-sa* *acəba*
 kaka CON-? CON-eat.IPFV food
 ‘Kaka is eating food’ (somewhere else) lit. ‘Kaka is there eating food’

- (30) *ŋina* *ŋë-tu* *ŋa-sa* *acəba*
 dog CON-? CON-eat.IPFV food
 ‘The dog is eating food’ (somewhere else)

2.2.3.2 Future distal

There is a variant of the simple future (see section 2.3.2.1) that marks that an event is distal. Normally, the simple future indicates nothing about where the action/event will take place. Contrast example (31) with (32). The only difference is the final vowel of the main verb and the associated tone. This suffix is either realised as *-á* or *-iá*. Often, the high tone is the only way to differentiate between this distal aspect and the imperfective aspect marker.

- (31) *ŋina* *ŋ-iðí* *aŋə-sé* *acəba*
 dog CON-FUT CON-eat.FUT food
 ‘The dog will eat food’

- (32) *ŋina* *ŋ-iðí* *aŋə-sá* *acəba*
 dog CON-FUT CON-eat.DIST food
 ‘The dog will eat food’ (somewhere else)

2.3 Tense

Tense in Moro is always marked by using auxiliary verbs, rather than by any special morphological marking on the main verb.

2.3.1 Past Tenses

2.3.1.1 Simple past

Simple past (i.e. past relative to the moment of speaking) is marked using the verb *fɔ* ‘be!’ As can be seen from examples (33) and (34), the form of this verb can be identical when it is used as an auxiliary as to when it is a main verb. Note also that for the simple past, the aspect on the main verb must always be imperfective. Perfective aspect is reserved for sentences with subordinate clauses (see section 2.3.1.2).

- (33) *ɲina* *ɲa-fɔ* *ɲa-sa* *acɔba*
 dog CON-PST CON-eat.IPFV food
 ‘The dog was eating food’

- (34) *ɲina* *ɲa-fɔ* *ðeðe*
 dog CON-be.PFV yellow
 ‘The dog was yellow’ (the dog is now dead or permanently gone)

The table below shows the verb *so* ‘eat!’ with various different subjects. It demonstrates that noun class and pronoun agreement behaves exactly as shown in Section 2.1. This agreement applies both to the auxiliary verb and to the main verb.

Table 8 - Simple past agreement

English	Subject	Auxiliary	Verb	Object
I was eating food		ig-a-fó	ig-a-sa	acəba
You were eating food	ŋa	ag-a-fó	ag-a-sa	acəba
You (pl.) were eating food	ñan	ñag-a-fó	ñag-a-sa	acəba
We were eating food	nanda	ñag-a-fó	ñag-a-sa	acəba
Tim was eating food	Tim	g-a-fó	g-a-sa	acəba
He/she was eating food	gënŋu	g-a-fó	g-a-sa	acəba
They were eating food	lëñjul	l-a-fó	l-a-sa	acəba
The dog was eating food	ŋina	ŋ-a-fó	ŋ-a-sa	acəba
The dogs were eating food	ñina	ñ-a-fó	ñ-a-sa	acəba
The camel was eating grain	ðëuria	ð-a-fó	ð-a-sa	ŋwana
The camels were eating grain	yëuria	y-a-fó	y-a-sa	ŋwana
The pig was eating beans	uṭra	g-a-fó	g-a-sa	ŋəðəmana
The pigs were eating beans	ləṭura	l-a-fó	l-a-sa	ŋəðəmana

2.3.1.2 Relative past

An example of the relative past has already been shown (reproduced below). A separate clause is always required to set a reference point. In form, the main clause is identical to the simple past with the exception that the aspect is now perfective. The patterns of agreement remain the same as in Table 8 (above).

- (35) *ummia ga-fó ga-só acəba ŋen igərmaṭo eṭa*
 boy CON-PST CON-eat.PFV food when I.arrived home)
 ‘The boy had eaten food when I arrived home’

2.3.2 Future Tenses

2.3.2.1 Simple future

Simple future (i.e. future relative to the moment of speaking) is marked using the verb *iðu* ‘do!’. As can be seen from the example below, there are many changes to the main verb. The concord prefix is completely new and the final vowel of the root is now *-e*. Also notice that the auxiliary has *-i* as the final vowel. Table 5 in section 2.2 shows that verbs with citation forms ending in *-i* or *-u* have future forms ending in *-i*. Those ending in *-o* have futures in *-e*. This means that the suffix on the auxiliary is also a future suffix.

(36)	<i>ɲina</i>	<i>ɲ-iðí</i>	<i>aɲə-sé</i>	<i>acəba</i>
	dog	CON-FUT	CON-eat.?	food
	‘The dog will eat food’			

The table below again shows the verb *so* ‘eat!’. The concord prefixes on the auxiliary are as expected, but those on the verb are different. In section 2.1.2 the insertion of a vowel *a* between the concord prefix and the root was discussed. Up until this point, this vowel has been glossed as if it was part of the concord prefix. Looking at the third person forms in the table, this vowel appears to have been transposed and moved in front of the concord prefix. It has been replaced with *ə* (except when preceded by *y*, which already has a strong vowel-like quality), which is the more normal vowel inserted in Moro when a vowel is required to break up a consonant cluster. According to the experiments of Jenks and Rose, the schwa in Moro has a reduced duration of usually less than 50ms, compared to 120-180ms for other vowels, thus it does not carry tone (Jenks and Rose 2007, 34). This adds weight to the hypothesis that it is simply breaking up the consonant cluster, and that the transposed

vowel *a* was the one with semantic significance. Further analysis is required to determine if the *a*-vowel has really been transposed and what its function may be, or if there are actually two completely separate *a*-prefixes.

For the third person human forms, the form of the verb would be expected to be *agəse*, rather than *aŋəse*. Phonetically, *ŋ* is very similar to *g*. It is probably that *aŋəse* is considered easier to pronounce. The Moro word list shows a number of words that start with *aŋV*, but none at all that start with *agV*.

Table 9 - Simple future agreement

English	Subject	Auxiliary	Verb	Object
I will eat food		ig-iðí	e-sé	acəba
You will eat food	ŋa	ag-iðí	ŋa-sé	acəba
You will eat food (pl)	ñañ	ñag-iðí	ña-sé	acəba
We will eat food	nanda	ñag-iðí	ña-sé	acəba
Tim will eat food	Ṭim	g-iðí	a-ŋə-sé	acəba
He/she will eat food	gëŋu	g-iðí	a-ŋə-sé	acəba
They will eat food	lëŋul	l-iðí	a-lə-sé	acəba
The dog will eat food	ŋina	ŋ-iðí	a-ŋə-sé	acəba
The dogs will eat food	ñina	ñ-iðí	a-ñə-sé	acəba
The camel will eat grain	ðëuria	ð-iðí	a-ðə-sé	ŋwana
The camels will eat grain	yëuria	y-iðí	a-y-sé	ŋwana
The pig will eat beans	uṭra	g-iðí	a-ŋə-sé	ŋəðəmana
The pigs will eat beans	ləṭura	l-iðí	a-lə-sé	ŋəðəmana

2.3.2.2 Further future forms

Besides the simple future already described, there are at least four other future forms. Data for all these forms was initially elicited by creating one or more imaginary situations and asking how they could be described. This technique is not as good as a text corpus based method for identifying tense/aspect forms, but is definitely more effective than simply asking for translations of English sentences.

2.3.2.2.1 Relative futures. The first two are relative tenses, and usually require an additional clause or separate sentence that sets the reference point in time.

In (37), the reference point is in the future, but the event of interest started sometime before this point and continues past this point.

- (37) *Tim g-iði aṅə-fete gə-sa acəba (ndə igiði igərmaṭo eṛa)*
 tim CON-FUT CON-be.FUT CON-eat.IPFV food (...)
 ‘Tim will be eating food (when I arrive home)’ – expected

In (38), the reference point is also in the future, but this time the event of interest was completed sometime before this point.

- (38) *Tim g-iði aṅə-ṛete gə-so acəba (ndə igiði igərmaṭo eṛa)*
 tim CON-FUT CON-be.PFV CON-eat.PFV food (...)
 ‘Tim will have eaten food (when I arrive home)’ – finished eating

The verb ‘to be’ is derived from two different roots, *fə* ‘be there!’ and *ṛeto* ‘be!’, with the first being used in the perfective aspect only. This is why the auxiliary appears differently in (37) and (38) above.

2.3.2.2.2 *Conditional future*. In (39), a particular point in the future is set at which something else of relevance will be happening. The form in the second clause is actually behaving as a conditional, i.e. ‘If the boy eats food, Tim will eat food’.

- (39) *Tim* *g-iði* *gə-so* *acəba*,
 tim CON-FUT CON-eat.PFV food,
ummia *g-iði* *aŋə-feŋe* *gə-sa* *acəba*
 boy CON-FUT CON-be.FUT CON-eat.IPFV food
 ‘Tim will eat food, the boy will be eating food’ – (At the time that Tim eats food, the boy will definitely be eating food too)

2.3.2.2.3 *Habitual future*. It can be seen that (40) is very similar to the simple future, except that the verb has a perfective marker and an additional prefix *t-* that marks habitual aspect. If the food had virtually run out, but a new harvest was just coming in, then this sentence would be very appropriate, as it indicates the start of a habitual activity.

The validity of this marker as being habitual was tested with verbs where habituality is highly unusual. Example (41) describes something similar to the Hindu idea of reincarnation – not something most Moro speakers would understand!

- (40) *Tim* *g-iði* *t-aŋ-só* *acəba*
 Tim CON-FUT HAB-CON-eat.PFV food
 ‘Tim will eat food’ (habitually)

- (41) ?*Tim* *g-iði* *t-aŋ-akayó*
 Tim CON-FUT HAB-CON-die.PFV
 ?‘Tim will die’ (habitually)

2.4 Tense/Aspect Forms

The table below breaks down the various tense/aspect forms into their constituent parts in a way that allows easy comparison (verb 'to eat', third person singular). The underlying morphemes are shown in bold type in the first three columns. The vowels in normal type are those added to avoid adjacent consonants and are selected according to vowel harmony. The question mark denotes a morpheme whose function is unknown.

Table 10 - Summary of tense/aspect combinations

Aux. 1	Aux. 2	Verb	Aux. 1	Aux. 2	Verb	Gloss
		g-a-só			CON-?-eat.PFV	ate
		g-a-sa			CON -?-eat.IPFV	is eating or eats
g-ëtu		g-a-sa	CON-?		CON -?-eat.IPFV	is eating (elsewhere)
g-a-fó		g-a-só	CON-?-be.PST		CON -?-eat.PFV	had eaten (when...)
g-a-fó		g-a-sa	CON-?-be.PST		CON -eat.IPFV	was eating
g-iõi		a-ŋə-sé	CON-?-do.FUT		?- CON -eat.FUT	will eat
g-iõi		a-ŋə-sá	CON-?-do.FUT		?- CON -eat.FUT	will eat (elsewhere)
g-iõi	a-ŋə-feŋe	gə-sa	CON-?-do.FUT	?-CON-be.FUT	CON -eat.IPFV	will be eating (when...)
g-iõi	a-ŋə-ŋeŋe	gə-só	CON-?-do.FUT	?-CON-be.PFV	CON -eat.PFV	will have eaten (when...)
g-iõi		gə-só	CON-?-do.FUT		CON -eat.PFV	if he will eat (then...)
g-iõi		ŋ-a-ŋə-só	CON-?-do.FUT		HAB-?- CON -eat.PFV	will eat (habitually)

The morpheme glossed as ? in the table definitely requires further investigation.

Notice that it appears either:

- Between the concord prefix and the root on the main verb
- Before the concord prefix on the main verb
- Before the concord prefix on the second auxiliary verb (whenever there is a second auxiliary).

CHAPTER 3

DERIVATIONAL OPERATIONS

3.1 Introduction

A number of derivational verbal operations in Moro have been identified. Compared to the previously described inflectional operations, their precise function is much more difficult to determine as their purpose is to alter the semantic content of the root (Payne 1997, 25). This implies that the same operation is likely to have different effects on different verbs and is overall likely to be far less productive than an inflectional operation.

3.1.1 Methodology

Many morphemes were initially identified by analysing a word list containing nearly 400 verbs. Many of the verbs on the list were actually derived from other verbs on the same list. Differences in form and meaning sometimes allowed initial hypotheses to be formed. All hypotheses had to be tested with my informant. This was an iterative process that involved:

- Asking for sentences containing particular Moro verb forms.
- Asking whether arguments were required, and if not, how the meaning would change.
- Asking for real life example situations.
- Asking for translations of English sentences.
- Generating Moro sentences or verb forms and asking if they were grammatical and if so, what they meant.

- Forming further hypotheses from the elicited data.

3.1.2 Analysis

In determining the functions of particular morphemes, emphasis has been put on analysing thematic roles in sample sentences and noting changes in valence.

Thematic roles are very useful in allowing the semantic content of the sentence to be determined.

3.2 Medio-passive Verb Suffix –nú

Moro has a verb suffix –nú that appears to have a passive function. Example (42) shows the normal, active use of the transitive verb *waso* ‘wash’. Comparing it with example (43) in which the suffix is added it can be seen that the patient has been promoted to the subject slot in front of the verb, while the agent has been dropped altogether. Note also that the verb is now agreeing with ‘bowl’ rather than ‘kuku’. As verbs in Moro agree with subjects, rather than objects, this provides added evidence that ‘bowl’ has now become a subject, rather than being merely a displaced object.

(42) *kuku g-wasó ləmbwalua*
 kuku CON-wash.PFV bowl
 AGENT PATIENT
 ‘Kuku washed the bowl’

(43) *ləmbwalua l-wasə-nú (*kuku-ga)*
 bowl CON-wash-PASS.PFV (kuku-with)
 PATIENT (*AGENT)
 ‘The bowl was washed (*by Kuku)’

In many languages, it is possible to reintroduce the agent as an oblique. In this example, reintroduction is not possible, as shown by the *. Attempts with other verbs to try and elicit sentences with reintroduced agents also failed, therefore it may be hypothesised that the *-nú* suffix marks a short passive, rather than a long passive. If a large corpus of Moro texts were to be examined, and no examples of long passive constructions could be found, this hypothesis could then be considered proven.

3.2.1 *Passive Form with an Animate Subject*

In examples where a prototypical patient is being promoted, the suffix always has the effect of creating a passive form. When the patient is less prototypical, a passive may not always result.

In example (44), we can assume that *Ŋaldo* is not capable of agentive behaviour – i.e. he is incapable of bathing himself (perhaps because he is a baby or a very old or disabled person). This assumption is entirely contextual. Conversely, he is an experiencer, rather than a patient, as he is animate and self-aware. When put into a passive form (45), *Ŋaldo* remains an experiencer and the agent is dropped as in example (43).

Example (46) shows what happens if *Ŋaldo* is substituted with *Kuku* (who we already know is capable of agentive behaviour). The form is identical to example (45), but the meaning is no longer passive, but reflexive.

In all such cases when the subject is an experiencer rather than a patient, this ambiguity exists. The only way to decide if the interpretation should be passive or reflexive is to examine the context to decide whether the subject could be acting as an agent.

- (44) *kuku g-wasó* *ŋaldo*
 kuku CON-bath.PFV ŋaldo
 AGENT EXPERIENCER
 ‘Kuku bathed ŋaldo’

- (45) *ŋaldo g-wasə-nú*
 ŋaldo CON-bath-PASS.PFV
 EXPERIENCER
 ‘ŋaldo was bathed’

- (46) *kuku g-wasə-nú*
 kuku CON-bath-PAS.PER
 AGENT
 ‘Kuku bathed himself’

3.2.2 Use with Intransitive Verbs

Prototypical passive constructions always result in the valence of the verb being decreased by one. In the case of a transitive verb it will become intransitive (as is the case in Moro). In the case of an intransitive verb, if such a construction is allowable, it should also decrease the valence to 0. This then results in an impersonal passive.

With intransitive verbs, Moro does not behave in a prototypical way. Instead, the valence remains the same and a passive causative or reflexive causative results. See examples (47)/(48) and (49)/(50) below:

- (47) *kuku ga-tunđú*
 kuku CON-cough.PFV
 ‘Kuku coughed’

- (48) *kuku ga-tunḍi-nú*
 kuku CON-cough-PASS.PFV
 ‘Kuku was made to cough / Kuku made himself cough’
- (49) *kuku ga-coñá*
 kuku CON-hungry.PFV
 ‘Kuku is hungry’
- (50) *kuku ga-coñi-nú*
 kuku CON-hungry-PASS.PFV
 ‘Kuku was made hungry / Kuku made himself hungry’

3.2.3 A Passive or Not?

It has been shown that the *-nú* suffix sometimes results in a passive, but at other times does not. Should it be considered as a passive marker or not?

Givón suggests that in some languages such as Spanish and Amharic, ‘a passive clause arose diachronically from, and still structurally resembles, a reflexive-reciprocal middle-voice clause’ (Givón 1994, 5). He gives the following structurally similar examples from Spanish:

- (51) **Spanish - Impersonal passive**
se-curó a los brujos
 REFL-cure.3SG OBJ the sorcerer
 ‘Someone cured the sorcerers’
- (52) **Spanish - Middle-voice**
se curaron los brujos
 REFL cure.PST.3PL the sorcerer
 ‘The sorcerers cured themselves’

Looking at the same language, Arce-Arenales, Axelrod and Fox argue for a different interpretation using the following example:

(53) **Spanish** (1993, 5)

Juan se mató

juan REFL kill.PST

‘Juan got killed’, or ‘Juan killed himself’

They make two points:

1. The form can be identical, but the meaning can be ambiguous. If Juan is an agent-subject in the second interpretation, which leads to an active interpretation, the first interpretation should also be active.
2. No overt oblique agent is allowed. If this was a ‘true passive’ (as they call it), such a restriction would not be expected. If the construction is instead to be considered in active voice, the subject slot is the only place that an agent could be expressed, thus explaining the restriction.

They thus interpret the Spanish *se* as being a middle diathesis marker. They define middle diathesis sentences as those containing ‘syntactically active subjects which **are** semantically affected by the action of the verb’ (emphasis mine) as opposed to normal active voice sentences that contain containing ‘syntactically active subjects which **are not** semantically affected by the action of the verb’ (emphasis also mine). (1993, 1).

It has already been shown that Moro exhibits these same properties – with animate subjects, there can be passive-reflexive ambiguity and overt oblique agents are prohibited. If Arce-Arenales’s argumentation is accepted, the Moro *-nú* marker might also be considered as marking middle diathesis.

The Spanish *se* marker shows further similarities to the Moro *-nú*. Arce-Arenales noted that *se* can sometimes also be used with intransitive verbs that semantically suggest that the subject is affected by the action. The addition of *se* increases this affectedness to the point that volitionality seems excluded (1993, 6).

As was shown in examples (47)-(50), Moro allows the *-nú* suffix on verbs that semantically suggest the subject is affected by the action, such as ‘to hunger’ and ‘to cough’. The addition of the suffix greatly increases this affectedness.

This similarity provides further evidence that *-nú* might be better interpreted as marking middle diathesis, rather than being a passive marker. From all the examples shown so far where the subject is animate, the function of the marker seems to be more on increasing the affectedness of the subject, rather than decreasing valence. On the other hand, Spanish has a separate passive, and Moro does not. In Moro, it will always have to fulfil both passive and middle functions, unless a new middle evolves. Possible the label medio-passive would be more appropriate in these circumstances?

3.2.4 Realisation of the *-nú* Suffix

The final vowel of the verb stem alters when the suffix is added. The table below shows examples of this behaviour for third person perfective verbs.

Table 11 - Verb forms with and without the -nú suffix

Active		Passive	
gacoñá	he is hungry	gacoñi-nú	he was made hungry
gamé	he praised (s.o./s.t.)	gami-nú	he was praised
gëgrí	he read (s.t.)	gëgri-nú	he was taught to read
gasó	he ate (s.t.)	gasə-nú	he was eaten
guṛəḏú	he circumcised (s.o.)	guṛəḏə-nú	he was circumcised

It can be seen that a simple rule applies:

front vowels a, e, i → i

back vowels o, u → ə

A similar table can be made for imperfective verb forms:

Table 12 - Verb forms with and without the -nia suffix

Active		Passive	
gácoña	he is becoming hungry	gacoñi-nia	he is being made hungry
gamia	he is praising (s.o./s.t.)	gami-nia	he is being praised
gëgria	he is reading (s.t.)	gëgri-nia	he is being taught to read
gasa	he is eating (s.t.)	gasə-nia	he is being eaten
guṛəḏa	he is circumcising (s.o.)	guṛəḏə-nia	he is being circumcised

The same rule applies as for the perfective forms:

front vowels a, e, i → i

back vowels o, u → ə

Additionally, note that the final vowel of the suffix changes from *ú* to *ia*. This behaviour is as would be expected for a verb that ends with a final *-u* in its perfective form. (See section 2.2.1).

3.3 Anti-passive Verb Suffix -ǫ

Many verbs allow the addition of a suffix *-ǫ*. It appears that the most common function of this suffix is detransitivisation. As can be seen in examples (54)-(57) below, the effect is to remove the object, which will either be an experiencer or a patient. This behaviour is the precise opposite of the *-nu* suffix, in that it demotes the patient, rather than demoting the agent, thus it could be considered to be an anti-passive. It should be noted that (54) and (56) require an object, while in (55) and (57) adding an object is prohibited.

(54) *Kuku ga-ɽəñó oða*
 kuku CON-kill.PFV deer
 AGENT EXPERIENCER
 ‘Kuku killed a deer’

(55) *Kuku ga-ɽəñə-ǫ*
 kuku CON-kill.PFV
 AGENT
 ‘Kuku killed’

(56) *Kuku ga-ɽəbó ərða*
 kuku CON-cut.PFV meat
 AGENT PATIENT
 ‘Kuku cut meat’

- (57) *Kuku ga-təbə-ðó*
 kuku CON-cut.PFV
 AGENT
 ‘Kuku cut’

The table below shows a number of Moro verbs with and without the $-\dot{\delta}$ suffix. The sentences that it has been derived from are in Appendix A. It can be seen that only transitive verbs may have the $-\dot{\delta}$ suffix applied to them (see *gerldo* and *gajomo*). This is to be expected, as intransitive verbs do not have an object that can be removed.

In all cases, it can be seen that the final vowel of the verb remains unchanged when the suffix is added. This implies that the suffix is unlikely to be a verb-final $-\dot{\delta}o\sim-\dot{\delta}u$, but is rather $-\dot{\delta}$ being inserted before the final vowel.

It can also be seen that while the majority of the suffixed verbs have intransitive meanings, some are transitive. Closer examination reveals that the governing factor is the vowel immediately before the $\dot{\delta}$. In every case where the final vowel of the stem is changed to ə , an intransitive meaning is possible and the behaviour demonstrated by examples (54)-(57) may be observed. It may then be concluded that there are at least two different categories of suffix.

Table 13 – Verbs with and without the –ð suffix

Without –ð suffix		vowel change		With –ð suffix			notes
gaṭaño	killed	transitive	o → ə	gaṭañoðo	killed	intransitive	
gerlɔ	walked	intransitive	*	*	*	*	
gatəbo	cut	transitive	o → ə	gatəbəðo	cut	intransitive	
*	*	*	o → ə	gatəbəðo	crossed	transitive	dif. meaning
			? → ə	gaundaðu	called	intransitive	
			? → ə	gaundaðu	called	transitive	
*	*	*	? → ə	ganowonəðo	looked	intransitive	
*	*	*	? → ə	goṭəbəðo	returned	intransitive	
gabəru	set free	transitive	u → ə	gabərəðu	was cured	intransitive	passive
			u → i	gabriðu	cured	transitive	dif. meaning
gakeo	hated	transitive	eo → e	lakeðo	hated	intransitive	reciprocal
gabwaño	loved	transitive	o → ə	labwanaðo	loved	intransitive	reciprocal
gajomo	moved	intransitive	*	*	*	*	
gamo	took	transitive	o → ə	gaməðo	took	intransitive	
geṭəðo	asked	di-transitive	o → ə	geṭəðəðo	asked	intransitive	
gəndu	caught	transitive	u → u	gənduðu	bit	transitive	dif. meaning
gableðo	pulled	transitive	o → ej	gableðeiðu	tightened	transitive	reciprocal
gababrldeðo	pulled (rep.)	transitive	o → ia	gababrldeðiəðo	pulled (rep.)	transitive	reciprocal
lopəðo	met	transitive	o → ai	lopəðaiðu	met	intransitive	reciprocal
*	*	*	? → ei	garrəjəiðu	showed/taught	transitive	
gabəṭe	encouraged	transitive		?	?	?	
gəntu	entered	transitive		?	?	?	

There are a number of verbs with the *-ð* suffix that do not appear to have any version without this suffix (*gaundəðu* ‘called’, *ganowonəðo* ‘looked’, *gorəbəðo* ‘returned’ and *garrəjəiðu* ‘showed/taught’). There are also examples of verbs that appear to have a suffix containing *ð*, but allow an additional *ð* containing suffix (*gabləðo* ‘pulled’, *lopəðo* ‘met’ and *gerəðo* ‘asked’). The verbs *gaundəðu* ‘called’, *ganowonəðo* ‘looked’, and *gorəbəðo* ‘returned’ all exactly fit the same pattern as other verbs with an *-əð* suffix. It seems likely that this is a true suffix and there exists or once existed a version of the verb without this suffix, therefore this group of verbs are behaving as deponents. All languages change with time, and new words are coined, while other words drop out of use for one reason or another. A clear example of prefixed words being retained, while the unprefixed version has dropped out of use can be seen in Koine Greek. *καταβαίνω* ‘go down’ and *ἀναβαίνω* ‘go up’ are both common in the Greek New Testament, while the unprefixed *βαίνω* ‘go’ does not appear at all.

Looking at the second category of verbs in the lower section of the table, it can be seen that in most cases the vowel before the *-ð* suffix does not match the final vowel of the stem. (*gəndu/gənduðu* is the exception). This would imply that the suffix is actually *-Vð* (where V is an unknown vowel). In all cases (except *lopəðaiðu*), the verb is transitive.

3.3.1 Reciprocity

For a number of verbs, the addition of *-ð* triggers a reciprocal interpretation in a verb that is not naturally semantically reciprocal. This applies to verbs with and without the extra vowel inserted before the *ð*, as can be seen in the following examples.

- (58) *Kuku na Kwari la-bərldē-ō ḍara*
 kuku and kwari CON-ITT.pull-PFV rope
 ‘Kuku and Kwari pulled a rope (repeatedly, in the same direction)’
- (59) *Kuku na Kwari la-bərldē-ia-ō ḍara*
 kuku and kwari CON-ITT.pull-RECP-PFV rope
 ‘Kuku and Kwari pulled a rope (repeatedly, in opposite directions – tug of war)’
- (60) *Kaka ga-bwañ-ō kuku-ŋ*
 kaka CON-love-PFV kuku-OBJ
 ‘Kaka loved Kuku’
- (61) *Kaka na Ŋaldo la-bwañ-ō*
 kaka and ŋaldo CON-love-RECP-PFV
 ‘Kaka and Ŋaldo loved each other’

In terms of thematic roles, reciprocity can be defined as a situation with two participants in which each behaves as an agent acting on the other. Both are agents and both are experiencers. This is true for examples (59) and (61), but what about other verbs with the extra vowel inserted such as *gableḍeiḍo* ‘tightened’ and *gēnduḍu* ‘bit’? In both of these, there is only one agent, so normal reciprocity is not possible. Both sets of verbs, however, contain the common element of action in opposing directions. For example, *Ŋaldo gēnduḍu kukuŋ* ‘Ŋaldo bit Kuku’ could possibly be considered as a kind of catching that is coming from two directions onto Ŋaldo. Similarly, *Ŋaldo gableḍeiḍo ḍar* ‘Ŋaldo tightened a rope’ could be considered as Ŋaldo pulling the rope in two different directions. In both cases, Ŋaldo is an agent exerting a force (catching or pulling, as determined by the verb) in two different directions on a patient/experiencer. The four diagrams overleaf demonstrate this principle of opposing actions with both types of verb:

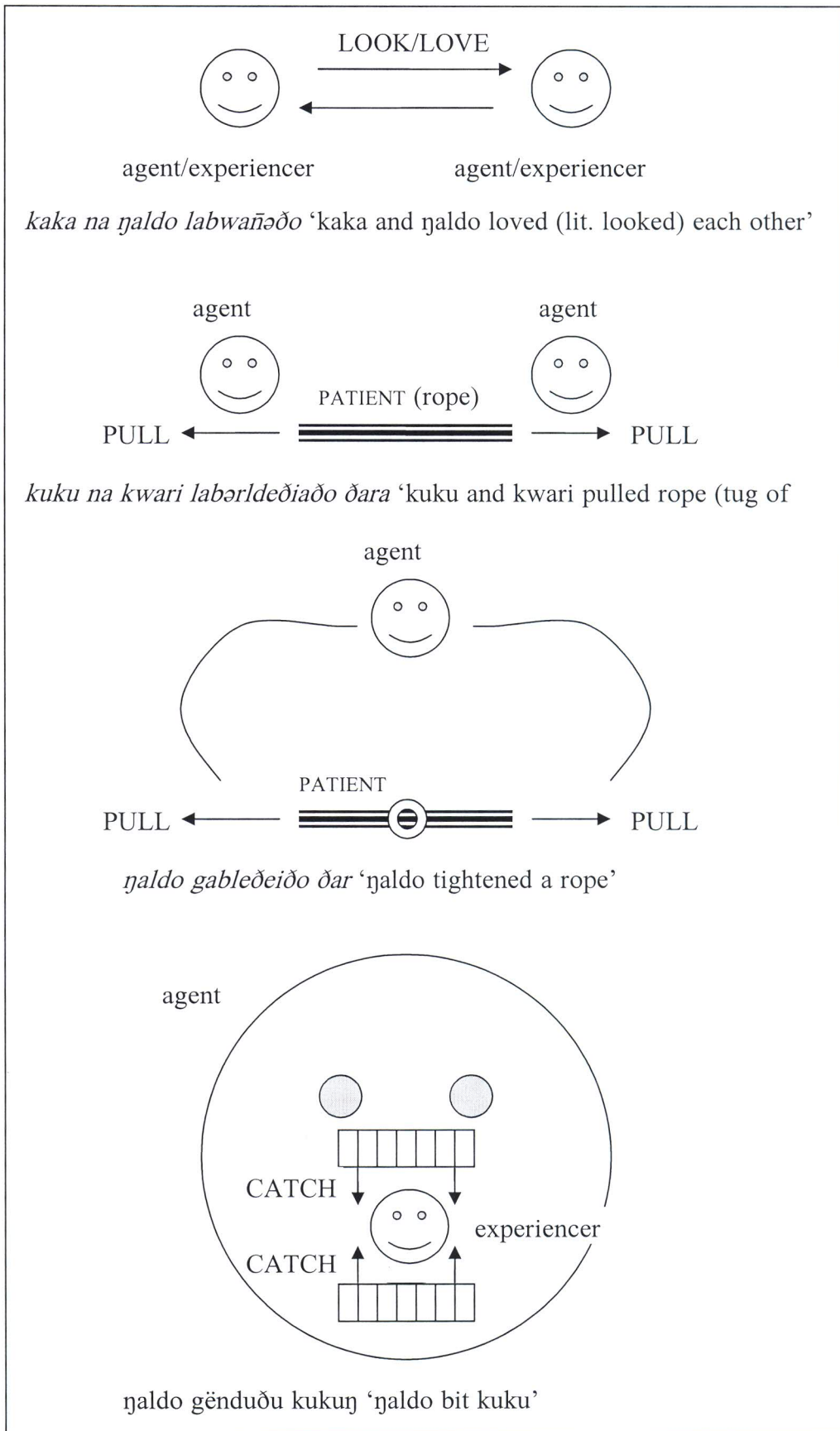


Figure 3 – Principle of opposing actions

3.3.2 Summary

It has been shown that there are at least two forms of the suffix in the data examined that have slightly different functions.

-ǰ is a suffix inserted before the final vowel. It is usually preceded by *ə*. The pair *gakeo/gakeǰo* demonstrate that this *ə* is not required when it is being inserted after a vowel. This implies that *ə* should not be considered as part of the suffix. It is only necessary due to the many limits in Moro concerning consonant clusters.

The function of the *-ǰ* suffix is to make a transitive verb intransitive by removing the object. In cases where the subject is plural, reciprocity of the subject is triggered.

-Vǰ is a similar suffix that is also inserted before the final vowel. It does not reduce the transitivity of the verb, but the effect of the verb appears to act in opposing directions on the object. The exact nature of the vowel V is currently unclear. Like many other features of Moro it is probably affected by vowel harmony. Much more data would be required to identify this vowel and demonstrate that there is a single underlying form and thus only one suffix, rather than several *-Vǰ* suffixes.

3.4 Locative Applicative Verb Suffix *-at*

In many cases, adding this suffix to a verb has the effect of allowing an indirect object to be used, but not always. Similarly, the suffix often increases the transitivity of the verb (e.g. from intransitive to transitive or from transitive to di-transitive), but again, not always.

Because there is no obvious grammatical function, the most effective way to identify what the suffix is doing is to use thematic roles to examine the semantics.

Traditionally, roles such as agent, patient, location, etc. are assigned to every argument of the verb. Often it can be difficult to decide which role to assign. In a sentence such as ‘Tim took the book from John’, what is John? Is he a source, or perhaps an experiencer? To avoid this difficulty, thematic roles will be divided into a thematic tier and an action tier (After Jackendoff 1990). The thematic tier describes spatial location, while the action tier describes who is acting on who and in what way. The table below shows the categorisation of common thematic roles.

Table 14 – Common thematic roles (Jackendoff 1990)

Action Tier	Thematic Tier
Actor	Theme
Agent	Goal
Experiencer	Source
Patient	Location
Beneficiary	
Instrument	

Examples (62) and (63) show the effect of adding the suffix to an intransitive verb. Note that walk in (62) has more a sense of taking steps, rather than going from one place to another. It would thus not be possible to say ‘Samuel walked to Karen’. In (63), it indicates that Arbab deliberately pressed down the mud with his feet to pack it into a hard surface. This is indicated in the thematic tier by labelling the mud as a goal.

- (62) *Samuel g-erld-ó*
 arbab CON-walk-PFV
 AGENT
 THEME
 ‘Samuel walked

- (63) *Arbab ga-rld-aṭ-ó ᵠaca*
 arbab CON-walk-?-PFV mud
 AGENT PATIENT
 THEME GOAL
 ‘Arbab trampled/trod down mud’

Examples (64) and (65) with another intransitive verb show exactly the same behaviour and thematic roles.

- (64) *Kaka ga-jom-ó alo*
 kaka CON-move-PFV sideways
 AGENT
 THEME
 ‘Kaka moved sideways’

- (65) *Kaka ga-jom-aṭ-ó Këci-ᵠ*
 kaka CON-move-?-PFV këci-OBJ
 AGENT -
 THEME GOAL
 ‘Kaka drew near to Këci’

Examples (66) and (67) show a transitive verb that remains transitive. In (66), the thematic tier is completely empty, as there is no obvious spatial motion of any of the participants. In (67), the purpose of cutting the stick is specifically to reduce its length (rather than to separate it from a tree etc.) There is a spatial element to the change from the stick being long (SOURCE/original state) to the stick being short (GOAL/final state).

- (66) *Kuku ga-ṭəb-ó ləfəra*
 kuku CON-cut-PFV stick
 AGENT PATIENT
 - -
 ‘Kuku cut a stick’
- (67) *Kuku ga-ṭəb-aṭ-ó ləfəra*
 kuku CON-cut-?-PFV stick
 AGENT PATIENT
 - SOURCE/GOAL
 ‘Kuku cut a stick (to shorten it)’

When the suffix is added to a transitive verb that then becomes di-transitive there is again a spatial aspect, but with some variation. In (69), the roles of agent and goal are realised in the same participant. Similarly, the roles of patient and theme are realised in the same participant. This is easily explained by looking at (68) in which patient and theme are also the same. As the intransitive verbs that were examined earlier are all active, if there is a theme at all (i.e. inherent spatial movement), it will always be identified with the agent.

- (68) *ŋaldo ga-m-ó ŋan*
 ŋaldo CON-took-PFV milk
 AGENT PATIENT
 - THEME
 ‘ŋaldo took milk’
- (69) *ŋaldo ga-m-aṭ-ó kuku-ŋ aḍam*
 ŋaldo CON-took-?-PFV kuku-OBJ book
 AGENT - PATIENT
 GOAL SOURCE THEME
 ‘ŋaldo took a book from Kuku’

The final pair of examples shows that the suffix can also be used when a simple spatial location is required.

(70)	<i>Tim</i>	<i>ga-ʃəñ-ó</i>	<i>oða</i>
	Tim	CON-kill-PFV	deer
	AGENT		PATIENT
	-		-
	‘Tim killed a deer’		

(71)	<i>Tim</i>	<i>ga-ʃəñ-aʃ-ó</i>	<i>oða</i>	<i>igi</i>
	Tim	CON-kill-?-PFV	deer	farm
	AGENT		PATIENT	-
	-		-	LOCATION
	‘Tim killed a deer on the farm’			

3.4.1 Summary

From the above data, it can be seen that the suffix *-aʃ* is used when a goal or location is present in the sentence, signifying either spatial movement or a spatial location, thus it is best considered a locative applicative.

It can also be used in combination with the *-Vð* suffix previously discussed. By comparing example (72) below with example (71) above, it can be seen that this suffix follows the *-Vð* suffix. (A larger number of examples with both suffixes would be needed before any conclusions could be drawn concerning the meaning of this form).

(72)	<i>Tim</i>	<i>ga-ʃəñ-að-aʃ-ó</i>	<i>ηəndri</i>
	Tim	CON-kill-RECP-LOC-PFV	bull
	‘Tim slaughtered/finished off a bull’ (the bull was almost dead already).		

3.5 Benefactive Applicative Verb suffix $-ə\underline{t}$

The use of this suffix always results in the valence of the verb increasing by one.

Analysing thematic roles (as described earlier) shows clearly that the use of the suffix always requires an extra participant with the role of benefactor. A few examples will suffice to demonstrate this. In examples (73) and (74), the addition of the suffix changes a transitive verb into a di-transitive verb. Semantically, the only change is the addition of a benefactor. Notice that the thematic tier remains completely empty.

(73)	<i>Kuku</i>	<i>ga-təb-ó</i>	<i>ərða</i>
	kuku	CON-cut-PFV	meat
	AGENT		PATIENT
	-		-
	‘Kuku cut meat’		

(74)	<i>Kuku</i>	<i>ga-təb-ət-ú</i>	<i>oppo</i>	<i>ərða</i>
	kuku	CON-cut-BEN-PFV	old.woman	meat
	AGENT		BENEFACTOR	PATIENT
	-		-	-
	‘Kuku cut meat for an old woman’			

Examples (75) and (76) again demonstrate the same phenomenon. In (76) there is a thematic tier that looks very similar to some of those for the $-ə\underline{t}$ suffix. This is unsurprising as ‘take’ is a verb of motion and should not distract focus from the defining benefactor role present.

(75)	<i>ŋaldo</i>	<i>ga-m-ó</i>	<i>ŋan</i>
	ŋaldo	CON-took-PFV	milk
	AGENT		PATIENT
	-		THEME
	‘ŋaldo took milk’		

- (76) *ŋaldo ga-m-ə́t-ú kukuŋ ađam*
 ŋaldo CON-took-BEN-PFV kuku-OBJ book
 AGENT BENEFACTOR PATIENT
 SOURCE GOAL THEME
 ‘ŋaldo took a book to/for Kuku’

The final pair of examples show how the addition of the suffix makes an intransitive verb transitive. Again, a benefactor is introduced. Note how in this case the benefactor is actually a source, rather than a goal.

- (77) *Kaka ga-jom-ó alo*
 kaka CON-move-PFV sideways
 AGENT
 THEME
 ‘Kaka moved sideways’

- (78) *Kaka ga-jom-ə́t-ú Koja-ŋ*
 kaka CON-move-BEN-PFV koja-OBJ
 AGENT BENEFACTOR
 THEME SOURCE
 ‘Kaka made space for Koja’

3.5.1 Realisation

It is unclear exactly what the form of this suffix is. In the majority of cases, it is realised as *-ətu*, but there are also instances of *-ítu*, *-éító* and *-əto*. Further data and analysis is required.

3.5.2 Summary

This suffix is a benefactive applicative. It always results in the valence of the verb being increased by one.

3.6 -c verb suffix

This verb suffix sometimes appears like it could be a causative. Example (80) refers to the act every evening of bringing the goats into the goat house and locking them in for the night. It is a good example of a causative – the boy makes/causes the goats to enter. It is interesting to note that the place that the goats enter into does not need to be specified, so the transitivity of the verb remains the same.

- (79) *Ummia g-ënt-ú eṛa*
 boy CON-enter-PFV house
 ‘The boy entered the house’

- (80) *Ummia g-ën-cú oṛo*
 boy CON-enter-CAUS.PFV goats
 ‘The boy led in the goats’

In the examples below, the meaning of the verb has changed. It is not clear how a causative version of ‘encourage’ could be interpreted as ‘care’. Again, the valence of the verb remains the same. It is possible that in the first example *nano* ‘on.body’ is actually altering the meaning of the verb (i.e. the basic meaning of the verb is something else).

- (81) *Tim ga-bəṛ-é ummia nano*
 tim CON-encourage-PFV boy on.body
 ‘Tim encouraged a boy’

- (82) *Tim ga-bəṛə-c-ó ummia-no*
 tim CON-encourage-CAUS-PFV boy-BEN
 ‘Tim cared for a boy’

Again, the example below is unclear. This is a verb that does not have an unsuffixed form. It is possible that it is derived from a no longer existing verb ‘to see’. If so, it would be ‘Paul made ɲaldo see’.

- (83) *Paul* *ga-rrəŋĕ-c-ú* *ɲaldo*
 paul CON-show-CAUS-PFV ɲaldo
 ‘Paul showed ɲaldo’

Without conclusive data it is hard to draw any conclusions. There is a possibility that the suffix marks causality, but further data and analysis are required.

3.7 Causative Final Vowel -i

Only 14 words from the word list of nearly 400 had *-i* as the final vowel.

Investigation showed that many of these had a similar partner with a different final vowel. As the pairs of examples below show, the version with *-i* as the final vowel is causative. The changes to the verb roots in the last four examples can be explained by vowel harmony (see section 4.2).

- (84) *Kaka* *ga-só* *acəba*
 kaka CON-eat-PFV food
 ‘Kaka ate food’

- (85) *Kaka* *ga-sí* *ɲaldo*
 kaka CON-eat-CAUS.PFV food
 ‘Kaka fed ɲaldo’

- (86) *Tim* *g- erld-ó*
 tim CON-walk-PFV
 ‘Tim walked’

- (87) *Tim* *g-irəld-í* *uṭéri*
 tim CON-walk-CAUS.PFV old.man
 ‘Tim helped an old man to walk’
- (88) *Kuku* *ga-cwar-ó*
 kuku CON-tired-PFV
 ‘Kuku is tired’
- (89) *Kuku* *ga-cwër-í* *lëmmia*
 kuku CON-tired-CAUS.PFV boys
 ‘Kuku made the boys tired’

CHAPTER 4

VOWEL HARMONY

Analysis of the word list containing nearly 400 verbs shows that in the imperative form, all Moro verbs end in a vowel, and this vowel is either *-a*, *-e*, *-i*, *-o* or *-u*. The chart below shows that the vast majority of verbs end in either *-u* or *-o*. It should be noted that the no words end in *-ē* or *-ə*.

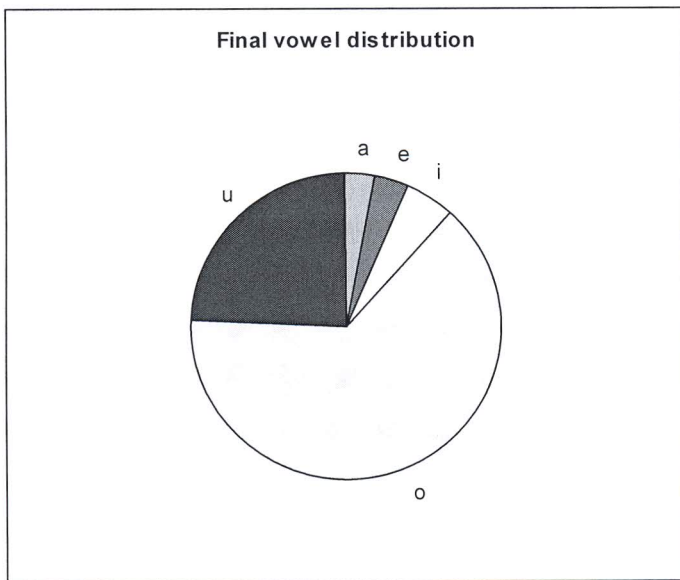


Figure 4 - Final vowel distribution

The complete word list of nearly 400 words was examined to determine if vowel harmony existed, and if so, how it works.

As the agreement prefix usually includes the vowel *a*, the verbs were compared in their imperative/citation forms (i.e. without an agreement prefix). Figure 5 below shows the basic pattern that was found. One category of verb contains just vowels

from the top ellipse (*i*, *u* or *ë*). Such verbs normally have a final suffix *-u*. The other category contains just vowels from the bottom ellipse (*e*, *o* or *a*). Such verbs normally have the final suffix *-o*. The schwa *ə* is neutral and may appear anywhere. It may appear that a mistake has been made in the diagram - *ë* is actually a more open vowel than *ə*. It has previously been mentioned that *ə* has a duration that is far less than that of other vowels and thus is much less sonorant and vowel-like. It is highly likely that this is the reason that it is excluded from vowel harmony, rather than that it somehow fits 'in the middle' and therefore falls into both groups.

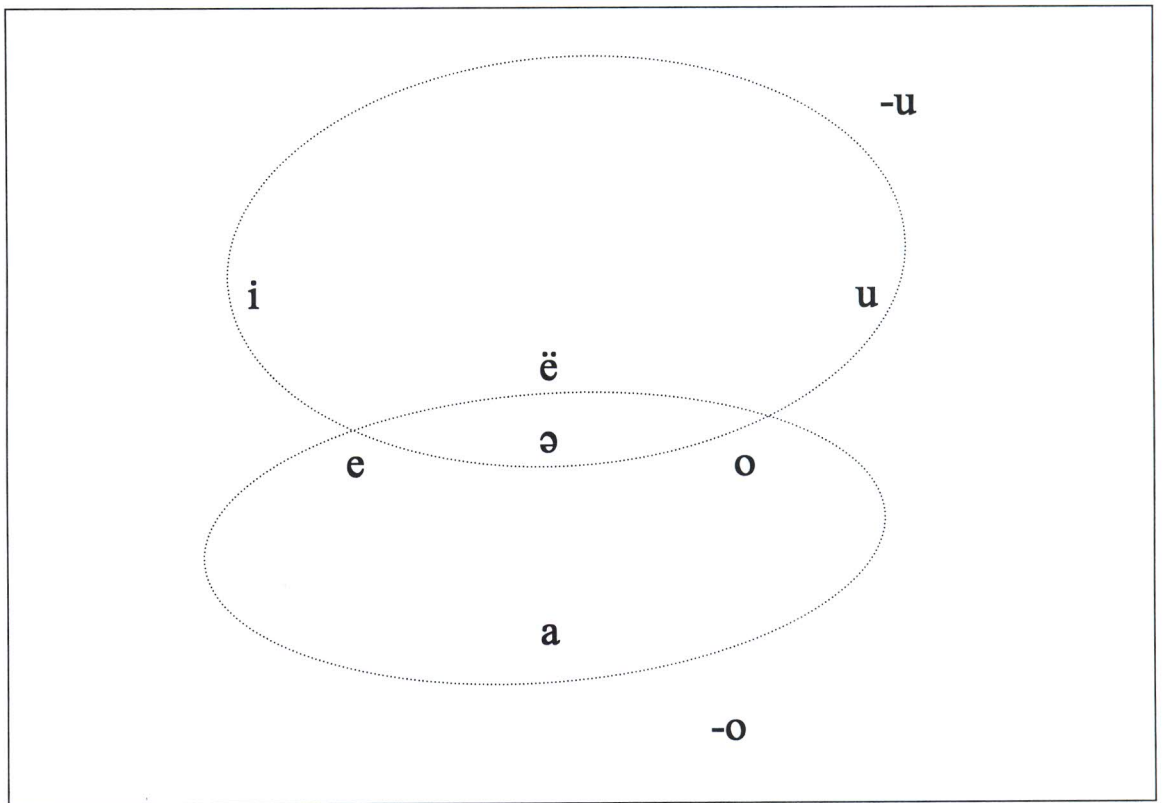


Figure 5 - Vowel harmony

4.1 Rules

Various rules are required to define when vowel harmony applies.

- If the verb root starts with an *a*, this should be ignored for the purposes of vowel harmony if the root contains vowels other than the schwa. For example, a verb such as *awutu* ‘throw!’, the initial *a* is ignored and the final vowel is in harmony with the vowel *u* in the root. If the root just contains schwas, the final vowel is more likely to be *-o* than *-a*, but it is indeterminate.
- The *-nu* medio-passive suffix is not affected by vowel harmony. For example *galatənu* ‘be made!’ does not have a final vowel suffix of *-o* as would otherwise be expected.
- If the root contains only schwas, in all cases except three, the final vowel is *-o* in the data.
- For words containing vowel glides, *ia* and *ai* behave like vowels in the bottom ellipse. *ei* and *ëi* behave like vowels in the top ellipse. Considering this phonetically, the midpoint between *i* and *a* is approximately *e*, which is right at the top edge of the bottom ellipse. The midpoint between *e* and *i* or *ë* and *i* will be slightly higher – moving it into the top ellipse.

When all of these rules have been applied, there are very few exceptions in the data to vowel harmony, which are listed here for reference. The first three appear to be derived from each other. All contain a final *-acu*. Perhaps *-cu* is an invariant suffix in the same way that *-nu* is? There are a further six words with the same suffix.

Examining the semantics of these words and any unsuffixed variants would be valuable.

aŋacu ‘inform!’

aṛəṇacu ‘offend!’

arrəṇacu ‘teach!’

The other five problem words also look very similar in form and meaning.

cino ‘be angry!’

cinano ‘be sad!’

ciṭano ‘be angry with s.o!’

geicano ‘be annoyed with s.o!’

irəwano ‘be amazed! /be ashamed!’

4.2 Root Changes

It was noted that the causative verb suffix *-i* can cause large changes to the form of the verb root. Part of the data from section 3.7 is reproduced here for ease of reference.

The perfective aspect marker has different forms for the two different vowel harmony groups. The causative marker remains the same, regardless of the vowel harmony of the root. So as to maintain vowel harmony when this suffix is added, sometimes the vowels in the root are substituted. Comparing examples (90) and (91), the former has vowel harmony in the lower ellipse. The *-i* causative suffix belongs in the upper ellipse, so in (91) the vowel *e* has been replaced by *i*. Similarly, in (92) and (93), the vowel *a* has been replaced with *ë* to maintain vowel harmony.

- (90) *Tim* *g- erld-ó*
 tim CON-walk-PFV
 ‘Tim walked’

- (91) *Tim* *g-ìṛəld-í* *ut̩érí*
 tim CON-walk-CAUS.PFV old.man
 ‘Tim helped an old man to walk’

- (92) *Kuku* *ga-cwar-ó*
 kuku CON-tired-PFV
 ‘Kuku is tired’

- (93) *Kuku* *ga-cwër-í* *lëmmia*
 kuku CON-tired-CAUS.PFV boys
 ‘Kuku made the boys tired’

4.3 Summary

The table below shows the function of the various different verb-final vowels.

Table 15 - Summary of verb-final vowels

Perfective/Imperative	Imperfective	Distal	Neutral/Future	Underlying
á	a	?	a	a
é	ia	?	e	e
í (causative)	ia	?	i	i
ó	a	á	e	o
ú	a, ia, ua	íá	i	u

From this table, it is possible to suggest some rules that allow each form to be derived from the underlying forms shown in the final column.

4.3.1 Perfective

Perfective aspect is marked by a high tone.

4.3.2 Imperfective

Imperfective aspect is marked by a suffix *-a*. This coalesces with the preceding vowel. In 2.2.1 it was stated that no rule could be found for the variety of realisations of imperfective aspect when the final vowel of the citation form was *u*. Looking at the chart below, it can be seen that the two groups that are not realised ambiguously extend into two of the extreme corners of the chart (which match the physical extreme positions inside the mouth of a speaker). The third extreme position is *u*. This fact makes it less surprising that *u + a* can be realised in a variety of ways.

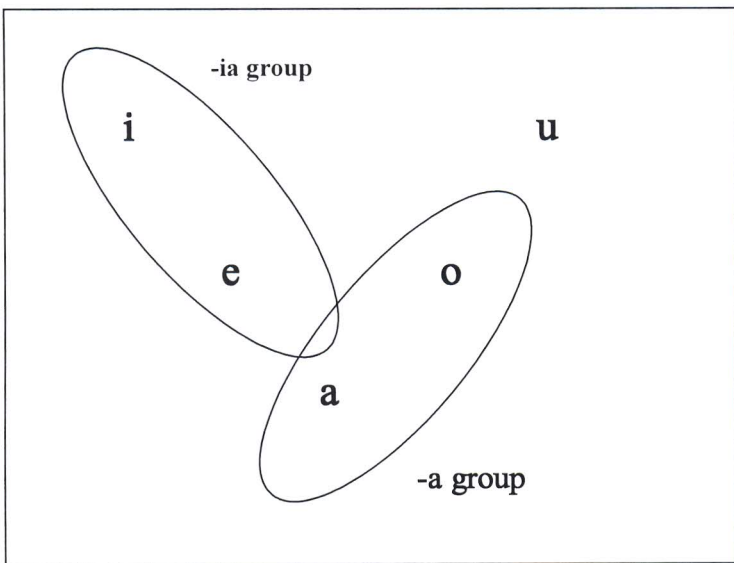


Figure 6 – Vowel chart for the realisation of imperfective aspect

4.3.3 Distal

Distal is marked by both a high tone and a suffix *-a*. It would be expected that more data would show it being realised as *á* in some cases when the preceding vowel is *u* (as for the imperfective aspect).

4.3.4 Neutral/Future

This is marked by the addition of a +front feature. It can be seen in the table that *a*, *e* and *i* remain the same. There are no vowels in Moro at the same height that are

further forward. Vowels *o* and *u*, however, can be and are fronted, becoming *e* and *i* respectively.

Only in the perfective and neutral/future aspects does the final vowel of a verb harmonise with the rest of the verb. This adds weight to the hypothesis that these forms do not have a vowel suffixed to the end, but the others do.

As was mentioned earlier, *ia* behaves like *o*, *e* and *u*, therefore in many cases the imperfective and distal markers could only harmonise if the verb root were to be altered. This does not happen as can be seen from examples such as *giliða* ‘buy!’ and *gaminia* ‘boast’.

As has already been mentioned the vast majority of verbs end with *-o* or *-u* in their perfective/imperative forms (60% and 23% respectively). It has already been shown that the *-i* suffix has a semantic meaning. It would not be unreasonable to also assume that the *-a* and *-e* suffixes also have some kind of semantic meaning. Further research into this question would be valuable.

CHAPTER 5

CONCLUSION

Both the inflectional morphology and the derivational morphology of Moro verbs have been examined in some depth. Moro has extremely complicated morphophonemics, which has made the task more difficult. This paper should be considered a preliminary piece of research, as so many questions have been left unanswered or tentatively answered.

It has been shown that Moro is a language with noun classes and subject-verb agreement, but no object-verb agreement.

Many different tense/aspect combinations have been described. The present-distal tense and the future-distal tense seem particularly noteworthy. The tense/aspect system of Moro appears heavily future orientated. Perhaps this is something that is reflected in the worldview of the Moro people?

Various derivational morphemes were examined, and it was demonstrated that Moro probably has a medio-passive, a type of reciprocal, a causative, a possible anti-passive and a benefactive. The breadth of use of some of the markers made putting a definite name to them quite difficult.

Vowel patterns in the entire list of nearly 400 verbs were examined, and it was shown that a strong system of vowel harmony exists. Rules were defined that described the data almost perfectly.

5.1 Further Research

Moro is an under researched language, and there are many areas of potential further study arising out of this paper.

- There is a need to do a thorough study of Moro phonology. This would enable the rules governing morphophonemic operations to be better defined.
- It would be useful to gather a large corpus of textual data. This would aid the search for both further inflectional morphemes as well as further derivational morphemes. It would also be useful in examining the semantics of particular verbs in natural sentences.
- The definitions of the derivational operations are particularly tentative. The examination of more data would enable stronger conclusions to be drawn.
- It would be interesting to see if there is any semantic motivation behind the *-a* and *-e* final vowels.
- The *a* morpheme that was glossed with ? in the final summary table in section 2.4 needs further investigation.
- It would be possible to do comparative studies with related languages, neighbouring languages and other Niger-Congo languages to better understand how Moro might have evolved. This may also help with identifying problem morphemes such as *a* above.

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APPENDIX A

The following sentences were used to derive the table in section 3.3. The left hand column contains the basic form of the verb while the column on the right contains the verb with the -ð suffix. A star denotes no such form appears to exist.

gaɾəño

John gaɾəño oða
John killed a deer
transitive

gerldo

Samuel gerldo
Samuel walked
intransitive

gaɾəbo

Joja gaɾəbo Cabwaŋ / Joja gaɾəbo əɾða
Joja cut Cabwa / Joja cut meat
transitive

gəndu

bapa gəndu ome
father caught a fish
transitive

transitive

gaɾəñəðo

Kaka gaɾəñəðo
Kaka killed
intransitive (-1)

*

gaɾəbəðo

Kuku gaɾəbəðo elano
Kuku cut/crossed the stream
transitive

Samuel gaɾəbəðo
Samuel cut (e.g. answer to ‘What did Samuel do?’)
OR Samuel refused
intransitive (-1)

gənduðu

ŋaldo gənduðu kukuŋ
ŋaldo bit kuku
transitive (obj. req)
ŋaldo gənduðu ŋera
ŋaldo bit ŋere
nere ŋənduðu kukuŋ
nere bit kuku

intransitive (recip.)

*

gaundəðu

Aldoba gaundəðu ummia

Aldoba called a boy

transitive (opt.)

Aldoba gaundəðu

Aldoba called

intransitive

*

ganowonəðu

Tim ganowonəðu

Tim looked

intransitive

Tim gawondaiðu ulηulη

Tim looked throughout the night (i.e stayed awake)

kaka ganwanəðu nəɾbesa

kuku looked on the table

*

goɾəbəðu

Komi goɾəbəðu

Komi returned

intransitive**gabəru**

kaka gabəru uɾəfia

kaka set free the bird

transitive**gabriðu**

kuku gabriðu ηere

kuku cured the girl

transitive (req.)

oppo gabərəðu

the old woman was cured/got well

intransitive**gakeo**

kaka gakeo kukuη

kaka hated kuku

transitive**gakeðu**

kaka na ηaldo lakeðu

kaka and ηaldo hated each other

intransitive (recip.)

kaka gakeðu eðað

kaka deviated from the road

gabwaño

kaka gabwaño kukuŋ

kaka loved kuku

transitive

gableđo

kuku gableđo đar

kuku pulled the rope

transitive

gababrleđo

kuku gababrleđo raldo

kuku pulled the goat (repeatedly - a long way)

transitive

lopəđo

kuku lopəđo kaka-ga

kuku met with kaka

transitive

gajomo

Kaka gajomo alo

kaka moved sideways/down - sitting and moves sideways

intransitive

gamo

ŋaldo gamo ŋan

ŋaldo took milk

transitive

gacwađo

Bapa gacwađo eduna

father anointed (rubbed) altar

transitive

labwañəđo

kaka na ŋaldo labwañəđo

kaka and ŋaldo loved (lit. looked) each other

intransitive (recip.)

gableđeiđo

kuku gableđeiđo đar (?)

kuku tightened the rope

transitive (recip.) – req.

gabərleđiađo

kuku na kwari labərleđiađo đara

kuku and kwari pulled the rope (tug of war)

transitive (recip.) req.

lopəđaiđo

kaka na ŋaldo lopəđaiđo

kaka and ŋaldo met each other

intransitive

gaməđo

kuku gaməđo

kuku gets married (kuku takes ?)

intransitive

gabəɾe

*

Tim gabəɾe ummia nano

Tim encouraged a boy (lit. boy on body)

transitive**gəntu**

*

ummia gəntu eɾa

The boy entered the house

transitive (correct col.?)

*

Based on a verb 'to see'?

garrəŋeïðu

Bolos garrəŋeïðu ŋen ŋerəmwa

Paul taught/preached the word of God

transitive (req.)**geɾəðo**

Arnamia geɾəðo ŋere acəba

Arnamia asked a girl for food

di-transitive (req.)

Arnamia geɾəðo ŋereʔ

Arnamia asked a girl

transitive**geɾəðəðo**

Arnamia geɾəðəðo erreka

Arnamia asked yesterday

intransitive