Moro Noun Class Morphology

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1. INTRODUCTION

Moro is a Kordofanian language belonging to the Western branch of the Heiban group (Schadeberg 1981), spoken in the Nuba Mountain area of Sudan. All data are from the northeastern (**ðətogovəla**) dialect of Moro, based on elicitation with Elyasir Julima of the town of Karakaray, Sudan.

Like other Niger-Congo languages, Moro nouns are marked for noun class through prefixation on the noun (tone not indicated):

		singular	**plural**	
(1)	C-/C-	**l**əbu	**ŋ**əbu	well
		laːwa	**ɲ**aːwa	mosquito
		ðəgi	**r**əgi	scab
		ðara	**j**ara	rope
		ŋəni	**ɲ**əni	dog
(2)	V-/C-	ugi	**l**ugi	tree, flower
		ebamba	**n**əbamba	drum
(3)	V-/V-	**ʌ**ðu	**i**ðu	breast

Goals of talk:

- descriptive overview of main classes and concord patterns
- semantic properties of classes, if any
- issue of vowel-initial nouns – is an initial vowel a root vowel or a prefix? (1a,f, h)

2. NOUN CLASS SYSTEM – DESCRIPTIVE OVERVIEW

- Database of approximately 300 nouns - # of each type is listed below
- Eight main noun class pairings and five single classes (mass nouns, verbal nouns)
- Various minor categories (see appendix)

(4) *Table of the main class pairings and single classes (tone not marked)*

Class	Initial segment	Concord segment	Singular	Initial segment	Concord segment	Plural	Gloss	#
g/l	V	g-/k-	evaja uðʌ	l-	l-	ləvaja ləðʷʌ	poor person worm	33
l/ŋ	l-/ʈ-	l-	ləvəra ləbu	ŋ-	ŋ-	ŋəvəra ŋəbu	stick well	27
l/ɲ	l-/ʈ-	l-	laŋwata laːwa	ɲ-	ɲ-	ɲaŋwata ɲaːwa	water cup mosquito	24
ð/r	ð-	ð-	ðaba ðapːa	r-	r-	raba rapːa	cloud friend	12
ð/j	ð-	ð-	ðamala ðaɾa	j-	j-	jamala jaɾa	camel rope	13
g/n	V	g-/k-	oʧa emərta	n-	n-	nəʧa nəmərta	milk pot horse	64
ŋ/ɲ	ŋ-	ŋ-	ŋera ŋusi	ɲ-	ɲ-	ɲera ɲusi	girl chick	12
j/j	low V	j-, k-, s-	ajen ʌðuni	higher V	j-, s-	ejen iðuni	mountain hearthstone	30
ŋ	ŋ-	ŋ-	ŋara ŋgara	*	*	*	sap salt	24
ð	b/p, m, ð	ð-	məgwaʈa ðəbaɾa	*	*	*	peanut cotton	15
j	V/s	j-, k-, s-	ibəgʷʌ aveja	*	*	*	fog liver	11
g	V	g-/k-	evea aŋala	*	*	*	sand haze	15
ð	ð-	ð-	ðawarðaŋ ðudəðaŋ	*	*	*	writing milking	....

- Consonant prefixes on noun are l-, ð-, ŋ-, ɲ-, n-, r-, j-; concord prefixes are these and g-. Initial vowels may be prefixes, or may be part of the root (see section 3).
- Noun class is reflected in concord patterns within the noun phrase and on the verb as subject agreement (5).

(5) **Noun class concord**:

a. **ð**-amalʌ-**ð**i **ð**-e-ʈ-a **ð**-obəð-o (ð-/j- class pair)
CL-camel-CL.DEM CL-REL-small-ADJ CL-run-PRFV
'this small camel ran away'

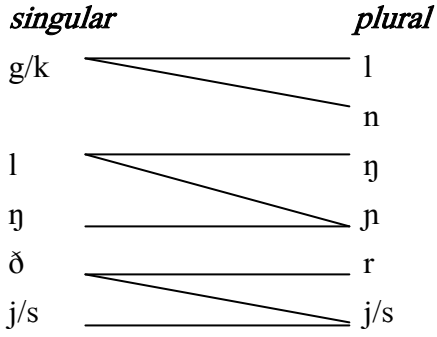
b. uʤi-**k**i **g**-e-ʈ-a **g**-obəð-o (g-/l- class pair)
CL-man-CL.DEM CL-REL-small-ADJ CL-run-PRFV
'this small man ran away'

Concord prefixes usually match the consonantal noun class prefixes.
V-initial nouns use g-/k-, j- and s- in different parts of the paradigm:

(6)

	V-initial			*C-initial*
	j/j pair — singular	*j/j pair — plural*	*g/n pair — singular*	*g/n pair — plural*
	'mountain'	'mountains'	'flea'	'fleas'
Instrumental	ajen-**j**a	ejen-**j**a	anʤəmə-**g**a	nanʤəmə-**n**a
Demonstrative	ajen-**s**i	ejen-**s**i	anʤəmə-**k**i	nanʤəmə-**n**i
Locative ('inside')	e**k**-ajen	e**s**-ejen	e**k**-anʤəme	e-nanʤəme

(7) *Concord consonant class pairings*



Many-to-many pairings are a feature of other Kordofanian languages Norton (2000:25-26). So is number ambiguity of concord — l- and ŋ- are common in both singular and plural. (Singular and plural are still distinguished by quantifiers and by some verbal agreement.)

3. SEMANTICS

Previous research on Kordofanian noun classes (Stevenson 1956-7, Schadeberg 1981, Guest 1997, Norton 2000) identified a number of different classes, many of which occur in Moro. The semantic properties listed apply to some, but not all, of the members of each class.

(8) *Table of Semantic Properties Associated with Classes*

Stevenson	*Stevenson semantic properties*	*Guest*	*Guest semantic properties*	*Our classification*	*Our semantic properties*
1. kw(u)-, gw(u)- 2. l(i)-	people	g/l	people	g/l	people
3. kw(u)-, gw(u)- 4. ʧ-, ʤ-, j-	nature	*unattested*	n/a	*unattested*	n/a
5. l(i)- 6. ŋw(u)-	unit/mass	l, lɽr, ɽr, ŋ	long, hollow, deep, round things	l/ ŋ	round, long things, fruit
7. k- 8. ʤ-, j-		*see g/n*	n/a	*see g/n*	n/a
9. t-, d- 10. d-, r-	long things	ð/r	long things	ð/r	some animals, long things
11. t-, d- 12. ʧ-, ʤ-, j-	harmful, large	ð/j	harmful, large	ð/j	?
13. k-, g- 14. ɲ-, n-	hollow, deep	g/n	common things	g/n	?
15. ŋ- 16. ɲ-	small animals	ŋ/ ɲ	small animals	ŋ/ ɲ	small animals
15a. t-, tr-	diminutive	*unattested*	n/a	*unattested*	n/a
17. ŋ-	augmentative	*unattested*	n/a	*unattested*	n/a
19. t(ɨ)-, ð(ɨ)-	infinitive	ð	abstract nouns, emotions	ð	verbal noun, abstract, nature
20. ŋ-	liquids, abstract	ŋ	liquids, abstract nouns	ŋ	liquids, mass nouns
21. ŋ- 22. j-, ʤ-	goat, etc..	r/j	goat, etc..	r/j	goat, etc.
23. l- 24. j-, ʤ-	eye, etc..	*unattested*	n/a	l/n	tooth
25. vowel 26. j-, ʤ-, i-	miscellaneous	j/j	foreign words	j/j	?
unattested	n/a	l/ɲ	animals and body parts	l/ ɲ	animals, body parts, objects
unattested	n/a	ð/g	trees, parts of trees	ð/g	tree derivatives

3.1 SEMANTIC COHESION

For classes with semantic properties, class membership does not guarantee semantics.

- class g/l is the usual human class, and is concord for anaphoric reference to humans
  → class g/l also contains nonhumans like ‘rat’ & ‘thing’
- semantically related words appear in different classes
  → ‘girl/child’ is in the ŋ/ɲ class (most often small animals)
  → ‘mother’ is in the l/ɲ class (most often animals and body parts)

3.2 SEMANTIC COERCION

Semantic properties are the decisive factor for concord in some instances.

- all words with initial labial stop or nasal are in ð class EXCEPT *matʃo* 'guy/man'
- *matʃo* has g-/l- class concord (common and anaphoric for humans)

3.3 POCKETS OF REGULARITY

Semantically diverse classes still contain semantic word families; e.g. the following words in (unpaired mass) class ð-

(9)	botʃa	‘ashes’	ðəβʷʌ	‘smoke’
	ðorəna	‘dust’	ðəbeːra	‘air/wind’

3.4 PHONOLOGY VERSUS SEMANTICS

- some nouns with anomalous initial C use phonologically closest concord consonant:

(10)	soweja	j-	(name of dance)	(cf. demonstrative: isi)
	tʃəgwʌnduʌ	j-	'axe’	
	tərəmbili	ð-	'automobile' (Arabic < English)	

- others use semantic default:

(11)	matʃo	g-/l-	'guy/man'	(default human concord)
	bətiə	ð-	'clarified butter'	(< Talodi group; default inanimate concord)
	kurʌ	ð-	'ball'	(< Arabic; default inanimate concord in order to distinguish from proper name)

4 VOWEL-INITIAL NOUNS

Class concord marked with consonant, usually matching initial segment of noun. **But many nouns are vowel-initial**: mostly singulars, in 3 class pairings and 2 unpaired classes:

(12) *Table of Vowel-Initial Classes*

Class	Initial segment	Concord segment	Singular	Initial segment	Concord segment	Plural	Gloss	#
j/j	low V	j-, k-, s-	ajen	higher V	j-, s-	ejen	mountain	30
g/n	V	g-/k-	otʃa	n-	n-	nətʃa	milk pot	64
g/l	V	g-/k-	evaja	l-	l-	ləvaja	poor person	33
j	V/s	j-, k-, s-	ibug^{w}ə	*	*	*	fog	11
g	V	g-/k-	evea	*	*	*	sand	15

Main problem: For each class in (12), is the initial vowel a prefix or part of the root?

4.1 THE j/j CLASS PAIRING

(13) *Vowel-initial nouns from j/j class*

	singular	*plural*	
Low vowel root (a, e, o)	ajen	ejen	'mountain'
	aɾoma	eɾoma	'black biting ant'
High vowel root (ʌ, i, u)	ʌbulukriə	ibulukriə	'dove'
	ʌtumi	itumi	'onion'

Moro vowel harmony: /a e o/ vowels raise to higher counterparts [ʌ i u] (Gibbard 2006)

Prefix analysis	*Root analysis*	
a- singular, e- prefix	one basic form (singular); one derived (plural)	
	a) fronting process	b) prefix [-back]

- No independent evidence for singular → plural derivational relationship
- No independent evidence for floating feature prefix
- No explanation for why initial vowel is restricted to /a/ and [ʌ] only

Conclusion for j/j Class: prefix a- (~ ʌ-) in the singular, prefix e- (~ i-) in the plural

Vowel prefixes are not common in Kordofanian

— Tira, Moro's closest relative, shares this class pair: prefixes a-/i- (Stevenson 1942, 1956-7)

— Not clearly attested otherwise

?? Otoro a-/dʒ- (Stevenson 1943, 1956-7, but not confirmed by Schadeberg 1981)

?? Warnang a-/c- (Schadeberg 1981, but very few data)

4.2 THE g/n CLASS PAIRING

(14) *Vowel-initial singular nouns*

a.	**a**dama	n**a**dama	'book'	→	initial vowel = root?
b.	**e**ɖeə	nɖeə	'dileb tree'	→	initial vowel = prefix?
c.	**e**bamba	n**ə**bamba	'drum'	→	initial vowel = ?

4.2.1 Central Vowels a/ʌ - no change to initial vowel in plural

(15)

	singular	*plural*	
a.	abəg^{w}ala	nabəg^{w}ala	'paper'
b.	ʌluŋ	nʌluŋ	'promiscuous person (m/f)'

4.2.2 Front vowels e/i - vowel loss or reduction

(16)

	Group 1 – vowel deletion first consonant in singular is coronal [t d n r]			*Group 2 – front vowel → [ə]* first consonant in singular is [l] or labial [b, m, v]		
	singular	*plural*		*singular*	*plural*	
a.	eɖeə	nɖeə	'dileb tree'	ebamba	nəbamba	'drum'
b.	erel	nɖrel	'side of face'	eləŋe	nələŋe	'king,leader'
c.	ereθ	nɖreθ	'clothing'	emərta	nəmərta	'horse'
d.	eʈam	nʈam	'neck'	evəða	nəvəða	'type of tree'
e.	itəli	ntəli	'year'	eg^{j}e	n**e**g^{j}e	'house'

4.2.3 Evidence that front vowels are reduced to [ə]

A. locative 'inside' prefix e- ([ek-] / __V) triggers reduction of front vowels

(17)

	singular	*plural*	*locative*	
Labial	ebamba	nəbamba	ekəbamba	drum
	eləŋe	nələŋe	ekələŋ	king, leader
Coronal	eʈam	ntam	ekəʈam	neck
	iɾiŋ	ndɾiŋ	ikəɾiŋ	name

… but no reduction with central vowels [a] or [ʌ]:

(18)

singular	*plural*	*locative*	
ʌniŋɛ	nʌniŋɛ	ikʌniŋ	ear
andəme	nandəme	ekandəme	flea

*B. /n + l/ combinations are avoided (*n-l) → [l] (/n/ not realized)*

Locative prefix n- 'on'

(19)

n-adama	'on the book'	nə-ðamala	'on the camel'
n-ome	'on the fish'	nə-nəmərta	'on the horse'
n-ebamba	'on the drum'	loandra	'on the stone'
n-rða	'on the meat'	ləme	'on the fishes'

- If words like 'eləŋe' 'king' were not vowel-initial in the plural (ləŋe), then would expect plural n- prefix to fail to attach due to *n-l constraint
- explains why nouns with first consonant /l/ pattern differently than other coronals and retain initial vowel (avoidance of *n-l sequence: *n-ləŋe)

Conclusion for front & central vowels in g/n class: reduction is favored analysis, *therefore initial vowel is root vowel*

4.2.4 Back round vowels

(20)

Group 1: vowel deletion No initial vowel if first consonant is coronal [d n r] or [g] < *ɽ			*Group 2: vowel reduction* No initial vowel and appearance of [ə] — labialization in plural of some words		
singular	*plural*		*singular*	*plural*	
odəloŋa	ndəloŋa	fox	oðeə	nəðeə	kind of deer
ogoːma	nɖaːma	thief	otʃːa	nətʃːa	milk pot
ogovela	nɖəvela	monkey	oteːliə	nəteːliə	spider
onɖəðje	nɖəðje	flea	otəmba	nətəm**b**^{w}a	ostrich
orəpwa	nɖɽpwa	nest hole	uməni	nə**m**^{w}əni	type of tree
uriθ	ndriθ	chain	odəgaːla	ndə**g**^{w}aːla	turtle

- Labialization preserves [+round] feature of a reducing vowel.
- Why doesn't labialization appear in all cases? – consonant is a poor host (tʃ) or vowel following potential host consonant is front [e] or [i]

(21)

Group 3: no vowel deletion			
singular	*plural*	*locative*	
odəgaːla	nodəgaːla	ekodəgaːla	turtle
omətʃaða	nomətʃaða	ekomətʃaða	afterbirth
umədi	numədi	ikumədi	small biting ant
uβ^{w}ʌ	nuβ^{w}ʌ	ikuβ^{w}ʌ	moon/month
wara	noara	ekoara	animal pen

Round vowels do not reduce in locative even if they delete/reduce in plural:

(22)
a. **o**dəloŋa (sg.) ndəloŋa (pl.) ek**o**dəloŋ (loc.) 'fox'
b. **u**riθ (sg.) ndriθ (pl.) ik**u**riθ (loc.) 'chain'

Conclusion for back round vowels of g/n class: vowel is part of root, *not a prefix.*

Root analysis:
- Allows for full range of vowels in initial position
- Central vowels do not reduce
- Front and back vowels delete between n- prefix and following coronal, elsewhere [ə]
- Back vowels variably reduce, sometimes with labialization on neighboring consonant

Comparison with related languages:

g/n class correlates with class 13/14 and class 7/8 in Stevenson's classification, which have the consonant prefixes **k-/g-** for singular

ex. Otoro g-öni (sg.) n-öni (pl.) ear' cf. Moro ʌniŋɛ (sg.) nʌniŋɛ (pl.) 'ear'

Moro has lost the initial velar in the singular nouns, but retained velar as concord.

Moro retains initial g- in a few words:

gi	ni	field
gala	nala	bead
gəla	nəla	dish

4.3 THE g/l CLASS PAIRING

(23)	a.	ʌdniə	lʌdniə	'young woman with 2/3 kids'	→ root vowel
	b.	ugi	lugi	'tree'	→ root vowel
	c.	waɾa	laɾa	'chicken'	→ prefix w-
	d.	evaja	ləvaja	'poor person'	→ ?
	e.	umərtin	ləm^{w}ərtin	'co-wife'	→ root vowel?

4.3.1 Central vowels – no change to initial vowel, [a] preceded by [w] in singular

(24)	**singular**	**plural**	
	ʌdniə	lʌdniə	young woman with 2/3 kids
	ʌgiə	lʌgiə	mental person
	waja	laja	fly/bee
	waɾa	laɾa	chicken

4.3.2 Front vowels – reduction to [ə]

(25)	*singular*	*plural*	
	evaja	ləvaja	poor person
	ibin	ləbin(anda)	sister/brother-in-law
	iməgəniə	ləməgəniə	excrement

4.3.3 Back round vowels

(26)

Group 1: reduction → [ə]			*Group 2: reduction → [ə]+labialization*		
singular	*plural*		*singular*	*plural*	
ome	ləme	fish	opːa	ləpːʷa	grandmother
omona	lamona	tiger	uðʌ	ləðʷʌ	worm
owːa	ləwːa	woman	udʌɾen	əldʷʌɾlen	uncle
uʤi	ləʤi	person	umərtin	ləmʷərtin	co-wife
umiə	ləmiə	boy/child	utʌɖiə	ətʷʌɖiə	grandfather, elder

As with g/n class, non-labialized forms in group 2 have poor consonant hosts or consonants are followed by front vowels

(27)

Group 3: no reduction		
singular	**plural**	
ugi	lugi	type of tree
orəwa	lorəwa	(her) brother

Conclusion for g/l class: vowel is part of the root, *not a prefix*.

- Central vowels do not reduce
- Front vowels reduce to [ə]
- Back vowels mostly reduce, sometimes with labialization on neighboring consonant
- Singular prefix – only remnant is [w] in two words whose first vowel is [a]

Comparison with related languages:

Corresponds to class 1/2 gwu- / li- class in Koalib-Moro (Stevenson 1956-7).
Initial velar and labio-velar were deleted, except before [a], which retained [w]

4.4 SINGLE CLASS FORMS

j- class (ex. ibugʷə ‘fog’) and g- class (ex. eveə ‘sand’)

- If j- class is parallel to j-/j- class, initial vowel should be prefix — all initial vowels *are* central or front, like those in the j-/j- class
- If g- class is parallel to g-/l- or g-/n- class, initial vowel should be root vowel – range of initial vowels attested, as in the g-/l- and g-/n- classes

5 CONCLUSION

- Moro has a productive noun class system with eight major class pairings and five single classes, along with a small number of minor classes
- Semantics are evident only in some classes, and not for all members
- Vowel-initial nouns fall into two groups
  1. vowels are prefixes (j/j class pairing)
  2. vowels are part of root, but delete/reduce following plural prefix (g/l and g/n)
- Single class V-initial nouns – parallel singular-plural class pairings

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APPENDIX - Minor categories

Class	Initial segment	Concord segment		Initial segment	Concord segment			#
l	l-	l-	laja	*	*		honey	1
l/j	l-	l-	ləŋaθ	e-	j, s-	eŋaθ	tooth	1
r/j	r-	r-	rlo	e-	j-, s-	ego	f. goat	4
j/ŋ	V	j-, k-	uləði	ŋ-	ŋ-	ŋuləði	termite	1
ð/g	ð-	ð-	ðərliə	round V	k/g-	urliə	root	5