Noun Phrases in Moro

Peter Jenks

1. Introduction

In this paper I describe Moro noun phrases in detail, including descriptions of noun phrases, deixis, possession, enumeration, and attributive modification, with comments on bare nouns and word order. Moro is a member of the Western-Heiban subgroup of Kordofanian languages (Schadeberg 1981), indigenously spoken in the Nuba Mountains of Sudan just north of the recently-formed border with South Sudan. This paper describes noun phrases in Thetogovela, one of seven dialects of Moro.[1]

Moro is a highly agglutinative language with rich inflectional morphology. One distinctive property of Moro is complex verbal morphology, involving alternations for tense, aspect, agreement with subjects, incorporated object pronouns, and valence-affecting suffixes marking passives, causatives, and applicatives. Phonologically, Moro is characterized by a (C)V(C) syllable template, allowing nasals, liquids, voiced fricatives, and geminates as codas. Moro is a tonal language with a privative high tone (Jenks & Rose 2011).

Abbreviations: ADJ – adjectival final vowel; CL –weak noun class agreement and concord; FOC – focus prefix; CMP – complementizer; IPFV – imperfective; NSRC – non-subject relative clause; PAS – passive; PFV – perfective; POS – possessive – PST – past tense; PL – plural; REDUP – reduplication; RTC – root clause; SCL – strong concord; SG – singular; SRC – subject relative clause.

The outline of the paper is as follows: section 2 introduces Moro noun classes, section 3 discusses the distribution and interpretation of bare nouns, section 4 concerns demonstratives, section 5 possessives, section 6 numerals, and section 7 discusses adjectives and relative clauses. Section 8 briefly examines noun phrase-internal word order.

2. Noun classes

As in many Niger-Kordofanian languages, Moro nouns are organized into a large and complex system of noun classes or grammatical genders. Moro nouns fall into classes based on their behavior with respect to two basic diagnostics. The first diagnostic for noun class is the initial segment of the noun, a synthetic marker of gender and number. This initial segment generally narrows down the set of possible classes that the noun could be part of. The second, decisive, diagnostic for noun class is the markers of concord and agreement that appear on adnominal modifiers and verbs with a given noun.

The description of Moro noun classes in this section relies heavily on Gibbard *et al.* (2009, see also Black & Black 1971). Gibbard *et al* relate their noun classes to those proposed for the Heiban subgroup of Kordofanian by Stevenson (1955-6, see also Schadeberg 1981). This grouping is presented in Table 1. While Moro noun classes do coincide with Stevenson's numbering system for Kordofanian to some extent, there are several noun classes that do not fit neatly into Stevenson's. For this reason, I continue to use the concord segments to identify the noun classes, i.e. *g/l*-class rather than class 1 or class 2. In interlinear translations I use 'CL' to gloss noun class agreement and concord.

Table 1. Noun classes (*from* Gibbard *et al.* 2009:107)

Class:	SG/PL	Stevenson	Singular	Plural	Gloss
	g/l	1/2	*evaja*	*ləvaja*	'pauper'
			ud̪ə́	*ləd̪ʷə́*	'worm'
	l/ŋ	5/6	*ləvəra*	*ŋəvəra*	'stick'
			ləbú	*ŋəbú*	'well'
	j/j	none	*ajén*	*ején*	'mountain'
			ʌðúní	*iðúní*	'hearthstone'

l/ɲ	none	laŋwata	ɲaŋwata	'water cup'
		láwá	ɲáwá	'mosquito'
ð/r	9/10	ðaba	raba	'cloud'
		ðápːá	rápːá	'friend'
ð/j	11/12	ðamala	jamala	'camel'
		ðárá	járá	'rope'
g/n	13/14	otʃːa	nətʃːa	'milk pot'
		emerṭá	nəmerṭá	'horse'
ŋ/ɲ	15/16	ŋerá	ɲerá	'child'
		ŋusí	ɲusí	'chick'

The table above shows that in many cases the plural of one noun class is the singular of another. For example, *l*-concord marks both plural nouns in the *g/l* class as well as singular in the *l/ŋ* and *l/ɲ* classes.

Returning to the question of the initial segment on the noun itself, it is important to note that while this segment generally corresponds to the concord prefix, there are exceptions. The first large class of exceptions are nouns which control *g* concord. These nouns are usually vowel-initial. The exceptions involve an initial *w-* that always precedes a low-central vowel, e.g. *wárá* 'fly, bee.' This state of affairs likely arose due to an unconditioned loss of word-initial /gʷ-/, Stevenson's observed prefix for class 1 nouns. Before most vowels, both /g/ and /w/ were lost word-initially, though /w/ was apparently retained before /a/, explaining the exceptions. Non-central vowels are often reduced in the plural of the *g/l*-class as well, as seen in the *uḍə́~ləḍʷə́* 'worm' and *otʃːa~nətʃːa* 'milk pot'.

The second class of exceptions in terms of correspondence between the initial segment of the noun and the concord segment it controls involves the *j/j* class, whose members generally are vowel initial. However, the initial vowels in this class are systematic: singular nouns begin with central vowels, either /a~ʌ/, while the initial segment in plural nouns of this class is a front vowel, either /e~i/. Whether the initial vowel is the higher or lower variant depends on the root's status for controlling Moro vowel-height harmony (Gibbard 2006, Gibbard *et al.* 2009).

The members of these purely formal noun classes do show weak semantic cohesion, though there are many exceptions. Gibbard *et al.* (2009) observe that class *g/l* is generally human, class *l/ŋ* includes many long objects, and

small animals tend to cluster in class *ŋ/ɲ*. Mass nouns are generally unpaired class *ð* or *ŋ*.

In addition to these major classes, Moro also possesses smaller noun classes that do not take plurals or have only a few representatives. As these noun classes consist of some recombination of one of the concord prefixes from Table 1, I will put them aside for the remainder of this paper, and simply focus on the classes above.

3. Moro bare nouns as arguments

Moro lacks determiners or articles with unmodified nouns. Therefore, bare noun are used in argument position with a range of meanings including definite, indefinite, and generic. The following example demonstrates that bare nouns can be used both for novel and familiar noun phrases:

(1) a. *éréká   í-g-ʌ-sʌtʃ-ú   **ów:á**   **n-óráŋ***
         yesterday   1SG-CL-RTC-see-PFV   SG.woman   and-SG.man
         'Yesterday I saw a woman and a man.'

     b. ***óráŋ**   gá-g-oval-á   **n-ów:á**   gá-g-obəl-á*
         SG.man   PST-CL-tall-ADJ and-SG.woman PST-CL-short-ADJ
         'The man was tall, but the woman was short.'

There is an assymmetry between singular and plural nouns in their ability to receive generic interpretations. As in many Indo-European languages, plural nouns can be interpreted generically while singular forms of nouns cannot. This is shown in subject position in (2) and object position in (3):

(2) a. ***eða**   j-a-ŋər-á*
         PL.meat   CL-RTC-good-ADJ
         'Meat is good.'

     b. ***rða**   r-a-ŋər-á*
         SG.meat   CL-RTC-good-ADJ
         'The/Some piece of meat is good.'

(3) a. *ŋénéə   nə́-ɲe-d-ó   úm:iə,   é-g-a-bwáɲ-á   **eða***
         when   CMP-1SG-be-PFV SG.boy   1SG-CL-RTC-like-IPFV PL.meat
         'When I was a boy, I liked meat.'

b. #*ŋénéə*   *nə́-ɲe-d-ó*   *úmːiə,*   *é-g-a-boáɲ-á*   **rða**
 when   CMP-1SG-be-PFV   SG.boy   1SG-CL-RTC-like-IPFV   SG.meat
 'When I was a boy, I liked the piece of meat.'

Using a singular noun in subject position in (2b) forces a referential reading for the subject, while the singular noun in (3b) results in a pragmatically odd sentence, namely, that the speaker liked a particular piece of meat when he was a boy. These examples show that bare singular nouns cannot be interpreted generically.

Bare singular noun phrases can receive non-specific interpretations in non-episodic environments, however. For example, in the following sentence a bare singular noun occurs in the subject and object position of a conditional:

(4) **umːiə** atə   k-érṭ-ó   **rða,**   n-áɲ́-s-é
  SG.boy   if   CL-has-PFV   SG.meat   CMP-3SG-eat-SUB
  'If a boy has a piece of meat, then he eats it.'

This sentence can be used to discuss a hypothetical situation. Thus, in the antecedent of a conditional, singular noun phrases can felicitously receive true indefinite interpretations.

The distribution of bare nouns in Moro, in particular the asymmetry between bare singular and bare plurals, is typical of languages which lack articles but which do have a generalized number distinction. Examples of similar languages include Russian and Hindi (Dayal 2004).

4. Demonstratives

Moro distinguishes two demonstratives, one form proximal and the other distal. Demonstratives are marked with the noun class of their nominal head. Both forms occur immediately after the noun, and both phonologically fuse with the noun in regular speech:

(5) a. *udʒí*   b. *udʒə́-**kː-i***   c. *udʒə́-**kː-ʌtí-kːə***
   SG.person   SG.person-SCL-this   SG.person-SCL-that-SCL
   'the/a person'   'this person'   'that person'

(6) a. *ðamala*   b. *ðamalʌ́-**ðː-i***   c. *ðamalʌ́-**ðː-ʌtí-ðːə***
   SG.camel   SG.camel-SCL-this   SG.camel-SCL-that-SCL
   'the/a camel'   'this camel'   'that camel'

Two issues are of particular interest here. The first is the change in the vowel-quality on the final syllable of the root, visible in (5b-c) and (6b-c), and the change in its tone, visible on the final vowel of *ðamala* in both (6b) and (6c). The second issue is the geminated concord marker in the proximal form — glossed SCL for "strong noun class concord" for reasons to be made clear. Wherever strong concord occurs, the geminated concord occurs in addition to high tone and vowel quality changes seen on final vowel of the nouns in (5) and (6).

In contexts where the noun is omitted, such as in fragment answers, demonstrative forms occur with an initial *í-*:

(7) a. Q: *ŋʷ-áḏámá*   *g-áŋga*   *n-á-bʷáɲ-á*
          FOC-SG.book   CL-which   CMP-2SG-want-IPFV
          'Which book is the one you want?'

     b. A: *íkː-í*   c. A: *íkː-ʌtíkːə*
          'This one.'   'That one.'

This clitic is also present in the demonstrative forms in (5-6), but it has fused with the final vowel of the noun. The morphological concatenation of the noun with */í/* triggers a predictable process of vowel hiatus resolution while H tone is assigned to the noun (see Rose & Strabone *to appear*, ex. 12): /i,e,u,o + í/→[ə́], and /a,ʌ + í/→[ʌ́].

Evidence that the */í/* forms a morpheme with the geminate class prefix comes from the fact that they co-occur on all definite modified noun phrases in Moro, including demonstratives, possessives (section 5), and some relative clauses (section 7.1); one never occurs without the other. Evidence that this prefix is morphologically separate from the demonstrative itself comes from the existence of a second H tone on the distal demonstrative; Moro morphemes, whether bound or free, functional or lexical, have only been found to permit a single specification of H (Jenks & Rose 2011).

The geminate concord marker itself is usually just the geminated class marker which appears on verbs, though there are two exceptions:

Table 2. Demonstratives

Class	'this'	'that'
g	*íkːi*	*íkːʌtíkːə*
l	*ílːi*	*ílːʌtílːə*
n	*ínːi*	*ínːʌtínːə*

j	ís:i	ís:ʌtís:ə
l	íl:i	íl:ʌtíl:ə
ŋ	íŋ:i	íŋ:ʌtíŋ:ə
ɲ	íɲ:i	íɲ:ʌtíɲ:ə
ð	íð:i	íð:ʌtíð:ə
r	ír:i	ír:ʌtír:ə

The first exception is the *j*-class, which provides reliable evidence for the existence of geminate concord as it is always pronounced /s/ in the geminated form, while verbal agreement occurs as /j/:

(8) *ajén*   ***s-ʌtí-s:ə***   ***j-ʌ-sʌtʃ-ən-ú***
     SG.mountain   SCL-that-SCL   CL-RTC-see-PAS-PFV
     'That mountain was seen.'

The j~s alternation will serve as an important diagnostic for geminate concord below as initial geminates are simplified following a consonant (8, see section 5.2). The second exception is the *g*-class, which is always realized as /k/ in geminate forms, even when reduced.

While the geminated agreement form can usually be predicted from the simple agreement form, the /s/ and /k/ alternants are less straightforward. Gibbard *et al.* (2009) treat /s/ and /k/ as allomorphs of /j/ and /k/, respectively.[2] As two forms of concord or agreement must be distinguished, I will introduce new terminology to refer to each form. The geminated form seen on demonstratives will be referred to as the *strong* form (glossed SCL), while the simple form seen on verbal subject agreement will be referred to as the *weak* form (glossed CL). Strong concord is always accompanied by an initial /í/ which attaches to the noun when possible, as described above.

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[2] An alternative would be to derive the geminated form from two simple forms which arose due to some morphological phenomenon. For example, the /í/-element may have its own agreement, íC, which becomes geminate with the agreement of the following modifier: íC-C-Mod. Yet this would require /j:/→[s] to be an active synchronic rule in Moro, a surprising result as it would involves changes in voice, manner, and place of articulation.

5. Possessors

Three separate forms of possessives must be distinguished in Moro. Which is chosen depends on whether the possessor is a full noun phrase or a pronoun on the one hand, and on the other whether the possessum belongs to a small closed class of kinship terms which take a distinct set of possessive suffixes.[3] Like all modifiers in Moro, possessors occur postnominally. Section 5.1 deals with possessive noun phrases, section 5.2 with possessive pronouns, and section 5.3 with inalienably possessed nouns.

5.1 Possessive noun phrases

Possessive noun phrases in Moro are marked with strong concord followed by a H-toned schwa. Table 3 provides possessive noun phrase following nouns from each concord class from Table 1. (NB: Kuku and Tutu are common names for men in Moro).

Table 3. Possessive noun phrases

Class	'N of kuku'	Gloss
g	udʒə́ -k-↓ə́-↓t̪út̪u	'Tutu's person'[4]
l	lidʒə́-↓lə́↓kúkú	'Kuku's people'
n	nəmer̪t̪ʌ́-↓n̪ːə́↓kúkú	'Kuku's horses'
j	ajén-↓sə́↓kúkú	'Kuku's mountain'
l	ləver̪ʌ́-↓l̪ːə́↓kúkú	'Kuku's sticks'
ŋ	ŋer̪ʌ́-↓ŋːə́↓kúkú	'Kuku's child'
ɲ	ɲer̪ʌ́-↓ɲːə́↓kúkú	'Kuku's children'
ð	ðápːʌ́-↓ðːə́↓kúkú	'Kuku's friend'
r	rápːʌ́-↓rːə́↓kúkú	'Kuku's friends'

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[3] Kertz (2006) is an earlier description of Moro possessives. In some cases, such as predicative possessives, she gives more details than I do here. In most cases, the forms and paradigms I provide are more complete.

[4] 'Tutu's person' has the idiomatic meaning 'Tutu's wife,' or 'X's husband' were the possessor a woman.

The possessor was changed from *kúku* to *ṭuṭu* in the *g*-class above to avoid regressive voicing dissimilation, which applies to the first of two voiceless segments. Thus, the strong concord marker become voiced before a following voiceless stop, e.g. *udə́-g-ꜜə́-ꜜkúkːu*.[5] Additionally, gemination does not occur after a schwa or closed syllable, as discussed in section 4.

The downstep in possessive forms is triggered by the occurrence of two lexical H tones on adjacent syllables within a phonological phrase. This is a predictable environment for downstep in Moro, and is also found on adjacent H tones in the verb stem.

Possessive noun phrases induce the same changes on the final vowel of the root that arise before demonstratives, including raising of the vowel and the addition of a H tone. This can be seen in the *l*-class form *laverʌ́* in Table 3, which is underlyingly all L (cf. Table 1). The following example shows that, like with demonstratives, the changes on the final syllable of the noun can be attributed to an initial /í/ which fuses with the final vowel of the noun.

(9) a. Q: *ðámala*   *ð-áŋga*   *ð-é-tʃoɲ-á*
             FOC-SG.camel   CL-which   CL-SRC-hungry-ADJ
             'Which camel is hungry?'

     b. A: *íðː-ꜜə́ꜜkúkːú*
             'Kuku's.'

Thus, possessives and demonstratives form a natural class in Moro in that they are marked with strong concord, triggering changes on the final vowel of preceding nouns occurring with an initial /í/ in isolation.

While possessive noun phrases generally occur with strong concord (10a), they can also co-occur with demonstratives (10b-c). When this happens, the demonstrative precedes the possessive, with only the demonstrative taking strong concord. The possessive is marked with weak concord:

(10) a. *é-g-a-bʷáɲ-á*   *jamal-ʌ́sː-*
          1SG-CL-RTC-like-IPFV   PL.camel-sCL-POS-Kuku
          'I like Kuku's camels.'

      b. *é-g-a-bʷáɲ-á*   *jamal-ʌ́sː-i*   *j-ə́-ꜜkúkːu*
          1SG-CL-RTC-like-IPFV   PL.camel-sCL-this   CL-POS-Kuku

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[5] For more on voicing dissimilation in Moro see Gibbard *et al.* (2009, fn.3), Jenks & Rose (2011, fn. 6), and especially Rose (2011).

'I like these camels of Kuku's.'

c. *é-g-a-bʷáɲ-á*   *ðápːʎ-ðː-ʌtí-ðːʌ*   *ð-ɔ́-↓kúkːu*
1SG-CL-RTC-like-IPFV   SG.friend-sCL-that-sCL   CL-POS-Kuku
'I like that friend of Kuku's.'

Together these forms suggest that strong concord is unique to the first modifier after the noun.

Confirmation for this idea comes from the fact that when multiple "possessives" occur, only the first is marked with strong concord:

(11) *é-g-a-bʷáɲ-á*   *súrʎ-s-ɔ́-kúku*   *j-é-ðamala*
1SG-CL-RTC-like-IPFV   SG.picture-sCL-POS-Kuku   CL-POS-camel
'I like Kuku's picture of the camel.'

Thus, we can conclude that the strong class marker is not an inalienable property of possessive modifiers, but rather that there is something special about the combination of certain definite modifiers with the head noun.

5.2 Possessive pronouns

Possessive pronouns have an identical syntactic distribution to possessive noun phrases and, like possessive noun phrases, show strong concord with their nominal head. Thus, the addition of a possessive pronoun to an all-L noun induces the addition of a root-final H tone and the raising of the final vowel, as introduced in section 3:

(12)   a. *ləvera*   b. *ləverʎ-lː-ʌŋ-əlʌŋ*
SG.stick   SG.stick-sCL-my-REDUP
'the/a stick'   'my stick'

As before, the changes on the final vowel of the root are due to fusion of /í/ with the final vowel of the noun:

(13)   a. Q: *ŋʷ-ðámala*   *ð-áŋga*   *ð-é-tʃoɲ-á*
FOC-SG.camel   CL-which   CL-SRC-hungry-ADJ
'Which camel is hungry?'

b. A: *íðː-əŋəðəŋ*
'Mine.'

Moro possessive pronouns, as do all its pronouns, distinguish eight person-number combinations, including a inclusive-exclusive distinction for first person plurals and a dual inclusive form. The internal structure of possessive pronouns includes strong concord and a person-number formative marker followed by a monosyllabic reduplicant. While the internal structure is only shown for the first row in Table 4, the other forms have identical structure:

Table 4. Possessive pronouns

Class	1SG	1DU.INCLUSIVE	2SG	3SG
g	*ík:-əŋ-kəŋ*	*ík-ʌláŋ-ki*	*ík-o-k:e*	*ík:-oŋ-koŋ*
l	*íl:əŋələŋ*	*íl:ʌláŋə́li*	*íl:ol:e*	*íl:oŋəloŋ*
n	*ín:əŋənəŋ*	*ín:ʌláŋə́ni*	*ín:on:e*	*ín:oŋənoŋ*
j	*ís:əŋsəŋ*	*ís:ʌláŋsi*	*ís:os:e*	*ís:oŋsoŋ*
ŋ	*íŋ:əŋ:əŋ*	*íŋ:ʌláŋə́ŋi*	*íŋ:oŋ:e*	*íŋ:oŋŋoŋ*
ɲ	*íɲ:əŋəɲəŋ*	*íɲ:ɛláŋə́ɲi*	*íɲ:oɲ:e*	*íɲ:oŋəɲoŋ*
ð	*íð:əŋəðəŋ*	*íð:ʌláŋə́ði*	*íð:oð:e*	*íð:oŋəðoŋ*
r	*ír:əŋərəŋ*	*ír:ʌláŋə́ri*	*ír:or:e*	*ír:oŋəroŋ*

Class	1PL.EXCLUSIVE	1PL.INCLUSIVE	2PL	3PL
g	*ík:-aɲ-kaɲ*	*ík:-ndɾ́-ki*	*ík:-alá-ke*	*ík:-en-ken*
l	*íl:aɲlaɲ*	*íl:əndɾ́li*	*íl:al̠e*	*íl:enlen*
n	*ín:aɲənaɲ*	*ín:dɾ́ni*	*ín:al̠ne*	*ín:en:en*
j	*ís:aɲsaɲ*	*ís:əndɾ́si*	*ís:al̠se*	*ís:ensen*
ŋ	*íŋ:aɲəŋaɲ*	*íŋ:ndɾ́ŋi*	*íŋ:al̠áŋe*	*íŋ:enəŋen*
ɲ	*íɲ:aɲ:aɲ*	*íɲ:əndɾ́ɲi*	*íɲ:al̠áɲe*	*íɲ:enəɲen*
ð	*íð:aɲəðaɲ*	*íð:ndɾ́ði*	*íð:al̠ðe*	*íð:enðen*
r	*ír:aɲəraɲ*	*ír:əndɾ:i*	*ír:al̠re*	*ír:endren*

Several morphological and phonological processes are active in these forms. Beginning with phonology, the most pervasive alternation is a rule of schwa-epenthesis, wherein a schwa is inserted between a nasal and a heterorganic sonorant or voiced fricative. Thus, compare *íŋ:enəŋen* to *íl:enlen* or *ík:enken*. Only the first form undergoes schwa epenthesis because of the heterorganic /n + ŋ/ sequence. The /l + n/ sequence does not undergo schwa-epenthesis because it is homorganic, while the /n + k/ sequence surfaces intact because /k/ is an obstruent. A second rule is the epenthesis of /d/ between /n + r/ sequences, only obviously alternating in *rendren*, but also likely active in the first person plural inclusive. This is a general phenomenon in Moro, [ndr]

sequences are common, but [nr] is unattested (cf. Gibbard *et al* 2009, p. 113). There is a third rule conditioning the appearance of geminates, which cannot co-occur with a coda in the previous syllable — i.e. they cannot occur after VC sequences. Additionally, geminates are not found to be reduced after the inserted schwa. While geminates do not seem to occur after schwa (cf. Table 3, for example), this could also be seen as arising due to the ordering of degemination before schwa epenthesis: *íl:əŋl:əŋ* → *íl:əŋləŋ* by degemination, *íl:əŋləŋ* → *íl:əŋələŋ* by schwa epenthesis, an instance of counterbleeding.

One difficult issue raised by these forms is whether the reduplicated final syllable arose due to some fossilized historical process or is the output of a productive morphological reduplication operation (*cf.* Kertz 2006). The functional status of pronouns and the rather idiosyncratic nature of the reduplicant support the fossilization analysis. Yet the form of the reduplicant is predictable, supporting the latter analysis. The generalization is as follows: if the whole class-pronoun sequence is a single syllable of the shape CVN, it is reduplicated in its entirety. Otherwise, the reduplicant is of the form *–Ci* or *–Ce*, as there is active vowel harmony between the base and reduplicant.

Further support for the productivity of reduplication comes from variation; shorter forms were sometimes provided as alternatives for the full *CCVN* reduplicant. Thus, *ləŋələŋ* is sometimes given as *lʌŋəli*, and *loŋəloŋ* as *loŋəle*. Further work is needed to determine whether these are free variants or whether they might represent dialectal differences.

5.3 Inalienable possession

There is a small class of Moro nouns which take the possessive pronouns as suffixes, an instance of inalienable (or obligatory) possession (Nichols 1988). Kertz (2006) observes that these forms only take nonsingular person suffixes which are syncretic for singular and plural possessors. Eight inalienably possessed nouns have been identified, all kinship terms, a unsurprising finding from a crosslinguistic perspective (cf. Bickel & Nichols 2011):

Table 5. Inalienable possession: Singular forms

GLOSS	1.EX	1DU.IN	1PL.IN	2	3
'mother'	*ləŋ-áɲ*	*ləŋ-ʌláŋ*	*ləŋ-ʌláŋ-ə́ńdr*	*ləŋ-aló*	*ləŋ-én*

'father'	*eṯáɲ*	*iṯʌláŋ*	*iṯʌláŋə́ńdr*	*eṯaló*	*eṯén*
'wife'	*wasáɲ*	*wʌsʌ́ləŋ*	*wʌsʌ́ləŋə́ńdr*	*wasálo*	*wasén*
'husband'	*eváŋgáɲ*	*ivʌ́ŋgʌ́ləŋ*	*ivʌ́ŋgʌ́ləŋə́ńdr*	*eváŋgáló*	*eváŋgén*
'offspring (sg.)'	*iðʲəŋgáɲ*	*iðʲəŋgʌláŋ*	*iðʲəŋgʌláŋə́ńdr*	*iðʲəŋgaló*	*iðʲəŋgén*
'sibling/cousin'	*oráɲ*	*uɾʌláŋ*	*uɾʌláŋə́ńdr*	*oraló*	*orén*
'uncle/aunt'	*úḍʌ́ráɲ*	*úḍʌ́rʌláŋ*	*úḍʌ́rʌláŋə́ńdr*	*úḍʌ́raló*	*úḍʌ́rén*
'parent-in-law'	*unʌ́ɲ*	*unʌláŋ*	*unʌláŋə́ńdr*	*unaló*	*unín*
'sibling-in-law'	*ibʌ́ɲ*	*ibʌláŋ*	*ibʌláŋə́ńdr*	*ibaló*	*ibín*

The translations provided for the kinship terms above are oversimplified; thus, *eṯ-* 'father' can also be used to one's father's brother, while *úḍʌ́r-* 'uncle/aunt' is used to describe one's mother's brother. Nadel (1947: p. 209-10) provides a more detailed description of kinship terminology in Moro.[6]

One interesting property of these suffixes is that they control the vowel harmony of the root, revealing an asymmetry in the harmony system, as discussed by Gibbard (2006). While the high-vowel suffix –*ʌláŋ* conditions high-vowel harmony on the noun root, e.g. *ur-ʌláŋ*, the low-vowel suffixes do not condition low-vowel harmony, e.g. *un-aló*. Additionally, the suffixes –*áɲ* and –*én* undergo active harmony conditioned by high-vowel roots, e.g. *un-ín*, while -*alo* does not. Furthermore, vowel raising is only triggered on these suffixes –*én* when the root is monosyllabic. Together, though, these facts indicate 1) that high vowels are marked and control vowel harmony in Moro, 2) that vowel harmony can be both root-controlled and affix-controlled, and 3) that affixes differ in whether they undergo harmony. Note too that the first person exclusive, second, and third person in Table 5 above are closely related to the pronominal formative in the corresponding possessive pronouns from Table 4.

Kertz (2006) also observes that the possessive pronouns can occur after the forms above to disambiguate the number of the possessor:

(14) a. *ləŋ-áɲ*   *k-əŋkəŋ*
mother-1EX   SCL-1SG.POSS
'my mother'

b. *ləŋ-áɲ*   *k-aŋkaŋ*
mother-1EX   SCL-1PLEX.POSS
'our mother'

These examples demonstrate that the possessive suffix on the noun is an instance of agreement, and does not replace a full possessive pronoun. The same can be shown with a full possessive NP below:

(15)   *was-én*   *k-ⁱə́-ⁱtútu*
         wife-3   SCL-POS-Tutu
         'Tutu's wife'

The nouns in Table 5 all control *g*-class concord, as shown in (14) and (15).

One difference between the possessive pronoun in the inalienably possessed nouns in Table 5 and the possessive pronouns in Table 4 is tone. While all inalienable possessive suffixes have a final H tone, only the first person dual inclusive form and the second person plural form have H tone in the possessive pronouns. The additional H tone could be related to the H contributed by the /í/ which accompanies strong concord.

One interesting fact in this regard is that the inalienably possessed nouns above cannot appear as a fragment answer to a constituent question. Instead, they take a suffix which is a reduced variant of the proximal demonstrative:

(16)   a.   Q: *ŋʷ-ʌ́dʒʌ́ki*   *n-ib-in*   *g-é-tʃoɲ-á*
                   FOC-who   CMP-SG.sib.in.law-3   CL-SRC-hungry-ADJ
                   'Whose sibling-in-law is hungry?'

         b.   A: *ŋʷ-íb-ⁱʌ́ɲ-ki*   *g-é-tʃoɲ-á*
                   FOC-SG.sib.in.law-3-SCL.this   CL-SRC-hungry-ADJ
                   'It's my sibling-in-law that's hungry'

         c.   A: *ib-ʌ́ɲ-ki*   d.   A: **ib-ʌ́ɲ*
                   SG.sib.in.law-3-SCL.this   SG.sib.in.law-3
                   'My sibling-in-law.'

The reduced demonstrative also occurs in equative and identificational copular clauses and clefts. Thus, 'that person is Peter' is rendered *udʒə́kːʌtíkʌ bitʳki*, and 'Kuku is my brother-in-law' is rendered *kúkːu ibə́ɲ**ki**. This suggests an answer to why *ki* is required after the answer in (16c): inalienably possessed nouns must be definite noun phrases, rather than predicates. In contrast, demonstratives and possessive noun phrases can be predicative, perhaps a precondition to occurring in isolation with strong concord.

Returning to tone, the noun 'wife' is exceptional in that it conditions the displacement of this final H tone one syllable to the left: *iṭ-ʌláŋ* vs. *wʌs-ʌ́ləŋ*. The noun meaning 'husband' is also unique in spreading its H onto the suffix

without deleting its final H: *ivʌ́ŋg-ʌ́lə́ŋ* vs. *úḍʌ́r-ʌlə́ŋ*. The latter phenomenon may be a case of tone doubling, which also occurs in Moro verb stems (Jenks & Rose 2011). The former displacement phenomenon is more surprising; I do not know of other equivalent processes in Moro.

The plural forms of inalienably possessed nouns introduce additional complications. For one, while most nouns take a plural *l*-class marker, the plural of 'mother' and 'father' is suppletive. Second, many of these forms take an additional plural suffix that occurs after the possessive pronoun:

Table 6. Inalienable possession: Plural forms

GLOSS	1.EX	1.IN.DU	1.IN.PL
'mothers'	*el-**áɲ-andá***	*il-**ʌlə́ŋ-andá***	*il-**ʌlə́ŋ-ə́ńdr***
'fathers'	*eráɲandá*	*irʌlə́ŋandá*	*irʌlə́ŋə́ńdr*
'wives'	*lʷasépandá*	*lʷʌsʌ́lə́ŋandá*	*lʷʌsʌ́lə́ŋə́ndr*
'husbands'	*laválápandá*	*lʌvʌ́ngʌ́lə́ŋandá*	*lʌvʌ́ngʌ́lə́ŋə́ndr*
'offspring (pl.)'	*líðʲə́ŋgápandá*	*líðʲə́ŋgʌ́lə́ŋandá*	*líðʲə́ŋgʌ́lə́ŋə́ndr*
'siblings'	*lorlápandá*	*lurlʌlə́ŋandá*	*lurlʌlə́ŋə́ndr*
'uncles/aunts'	*ḷḍʷárlápandá*	*lḍʷʌ́rlʌlə́ŋandá*	*lḍʷʌ́rlʌlə́ŋə́ndr*
'parents-in-law'	*lnʷápandá*	*lnʷʌlə́ŋandá*	*lnʷʌlə́ŋə́ndr*
'siblings-in-law'	*ləbápandá*	*ləbʌlə́ŋandá*	*ləbʌlə́ŋə́ndr*

	2	3
'mothers'	*el-**ál-andá***	*el-**én-andá***
'fathers'	*erálandá*	*erénandá*
'wives'	*lʷasálandá*	*lʷaséʲnandá*
'husbands'	*laválálandá*	*laválénandá*
'offspring (pl.)'	*líðʲə́ŋgálandá*	*líðʲə́ŋgénandá*
'siblings'	*lorlálanda*	*lorlénandá*
'uncles/aunts'	*lḍʷárlálandá*	*lḍʷárlénandá*
'parents-in-law'	*lnʷálandá*	*lnʷínandá*
'siblings-in-law'	*ləbálandá*	*ləbínandá*

While the *–andá* suffix is obligatory for many of these forms, it is optional for the first person exclusive and second person forms. Thus, *elaló* is an acceptable variant of *elálandá*. Another exception is *lʷaséʲn*, an optional

variant of 'his wives.'[7] In addition, we can see that the first person inclusive plural form is not marked with the *–andá* suffix but *–ə́ńdr*.

Black & Black (1971) observe that the *–andá* suffix has other uses, appearing on nouns and proper names with the meaning 'those with him/her,' e.g. *jasər-andá* 'Elyasir and his friends and family.' This seems to be an instance of an *associative plural* (den Besten 1996). The fact that the plural attaches to nouns high in the animacy hierarchy, such as pronouns, proper names, and kinship terms, is unsurprising; Corbett (2000) observes that animacy is often implicated in the distribution of plural marking in languages with more than one system.

The one additional complication is the presence of an unexpected /l/ in the plural forms for 'siblings,' e.g. *lorláɲandá,* and 'uncle/aunts,' e.g. *ḷḍʷárláɲandá.* Forms such as *eráɲanda* 'my fathers' rule out the possibility of *l*-epenthesis between /r/ and a vowel, which means that the /l/ may be part of the plural root.

To summarize, this section has demonstrated that there are two separate strategies for marking possessives in Moro, either with a separate possessive noun phrase or pronoun, or with a possessive suffix. The latter strategy is restricted to a small closed class of kinship terms, and these suffixes can co-occur with full possessives as well. We saw that full possessives involve the same geminate concord as demonstratives and trigger the same alternations in the final vowel of the noun they modify.

6. Numerals

Like demonstratives and possessives, Moro numerals occur postnominally. Unlike demonstratives and possessives, on the other hand, Moro numerals do not all agree with the head noun, and when they agree, they show the simple agreement pattern seen on verbs rather than the concord geminate

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[7] Black & Black (1971:46) indicate that *–andá* marks the plurality of the possessor, rather than the possessum. While this may be a dialectal difference between the Wërria dialect described by the Blacks and Thetogovela, the finding that putatively plural possessive suffixes would be exclusively singular with inalienably possessed nouns would be surprising.

pattern observed above. These properties of numeral modification can be seen in a noun phrase like *jamala igǝtʃín* 'three camels'; the geminate *s*-typical of the *j*-class is absent, as are the changes in the tone and vowel quality on the final syllable of the noun observed with demonstrative and possessive forms (cf. 6, Table 3). The initial /i/ on 'three' is due to a phonological process, /jǝ/→[i,e], modulo vowel harmony.

With these properties of numeral modification in mind, the possible forms of the numerals 1-5 are given below based on the noun classes from Table 1:

Table 7. Moro numerals: 1-5

Class	One	Two	Three	Four	Five
g/l	*gʷǝnto*	*lǝgǝtʃan*	*lǝgǝtʃín*	*marlon*	*ðénǝ́ŋ*
g/n	*gʷǝnto*	*nǝgǝtʃan*	*nǝgǝtʃín*	*marlon*	*ðénǝ́ŋ*
j/j	*ento*	*egǝtʃan*	*igǝtʃín*	*marlon*	*ðénǝ́ŋ*
l/ŋ	*ḷnto*	*ɲǝgǝtʃan*	*ɲǝgǝtʃín*	*marlon*	*ðénǝ́ŋ*
ŋ/ɲ	*ŋʷǝnto*	*ŋgǝtʃan*	*ŋgǝtʃín*	*marlon*	*ðénǝ́ŋ*
ð/r	*ðǝnto*	*rǝgǝtʃan*	*rǝgǝtʃín*	*marlon*	*ðénǝ́ŋ*

As was noted before, the *j*-class forms occur with an initial [e] or [i], while the other classes surface with the simple (non-geminate) concord prefix followed by a L-tone schwa; note the /g/ in *g*-class forms rather than geminate /k/. Additionally, only the numerals 'one' through 'three' agree; the numerals 'four' and 'five' do not inflect at all. Note too that while 'one' agrees with the singular form, 'two' and 'three' agree with the plural form of the noun. However, the plurals of 'two' and 'three' surface with an initial /ŋ/ in the plural *ɲ*-class rather that /ɲ/, e.g. *ŋgǝtʃan*, due to nasal assimilation to the following velar stop.

In addition to lacking geminate concord and not inducing changes on the final vowel of preceding nouns, numerals allow H tone to spread from preceding H-toned nouns onto the first two syllables of L-toned numerals, compare *ején égǝ́tʃan* 'three mountains to *jamala igǝtʃín* 'three camels.'[8] Additionally, when used in isolation, numerals do not occur with the initial /í/ which occurs with possessives and demonstratives in this environment:

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[8] Some nouns do not spread their H, e.g. *rápːá rǝgǝtʃin* 'three friends.' This difference may be lexical; Moro verb roots include a similar subclass (Jenks & Rose 2011:226).

(17) a. Q: *á-g-a-bʷáɲ-á*   *nəmərṱá*   *↓mə́náw*
             2SG-CL-RTC-want-IPFV   PL.horse   how.many
             'How many horses do you want?'

      b. A: (*é-g-a-bʷáɲ-á*)   *gʷ-ənto*
             1SG-CL-RTC-want-IPFV   CL-one
             '(I want) one (horse)'

      c. A: (*é-g-a-bʷáɲ-á-lo*)   *n-əgətʃan*
             1SG-CL-RTC-want-IPFV-3PL.OM   CL-two
             '(I want) two (horses).'

These numerals in (17b-c) are identical to the forms that would occur after an overt noun, modulo the effect of tone spreading. However, (16c) shows that when a plural noun does not occur overtly a plural object marker, *–lo*, appears on the verb. No object marker occurs in the singular. This is true even if the deleted noun is human. For example, an appropriate response to *ígʌsʌtʃú ɲerá ↓mə́náw* 'How many children did you see?' would be *ígʌsʌtʃú ŋʷə́nto* 'I saw one.' The question cannot be answered *ígʌsʌtʃə́ŋó ŋʷə́nto* 'I saw-3SG.OM one', which has the meaning 'I saw him alone.'

For numerals from 1-9, Moro has a quinary, or base-five, counting system, illustrated for two noun classes in the following examples:

Table 8. Moro numerals: 6–15

#	*g/l*-class		*ŋ/ɲ*-class		
6	*ðénə́ŋ*	*nə-gʷənto*	*ðénə́ŋ*	*nə-ŋʷənto*	five and-CL-one
7	*ðénə́ŋ*	*-lə-gətʃan*	*ðénə́ŋ*	*nə-ɲəgətʃan*	five and-CL-two
8	*ðénə́ŋ*	*-ləgətʃin*	*ðénə́ŋ*	*nə-ɲəgətʃin*	five and-CL-three
9	*ðénə́ŋ*	*nə-marlon*	*ðénə́ŋ*	*nə-marlon*	five and-CL-four
10	*reð*		*reð*		ten
11	*reðə*	*nə-gʷənto*	*reðə*	*nə-ŋʷənto*	ten and-CL-one
12	*reð*	*-ləgətʃan*	*reðə*	*nə-ɲegətʃan*	ten and-CL-two
13	*reð*	*-ləgətʃin*	*reðə*	*nə-ɲəgətʃin*	ten and-CL-three
14	*reðə*	*n-əmarlon*	*reðə*	*nə-marlon*	ten and-CL-four
15	*réð*	*ðénə́ŋ*	*réð*	*ðénə́ŋ*	ten and-CL-five

Table 8 shows that complex additive numerals are formed via overt coordination with the second numeral following the coordinating proclitic *nə=*. Note that *nə=* does not occur before /l/-initial numerals for phonological reasons (see section 7.2). The second numeral agrees with the

noun class of its head; when the second numeral is 'one', such as in 'six' and 'eleven,' it shows singular agreement. The numeral 'ten' is suppletive and does not agree with its nominal head. The alternation between *reð* and *reðə* is due to the schwa-epenthesis rule introduced in section 5.2.

Numerals higher than 15 involve multiple instances of coordination:

(18) a. *ɲerá*   *réðə*   *nə-ðénə́ŋ*   *nə-ŋ-ʷə́nto*
          PL.child   ten   and-five   and-CL-one
          'sixteen children'

      b. *ɲerá*   *réðə*   *nə-ðénə́ŋ*   *nə-ɲ-əgətʃan*
          PL.child   ten   and-five   and-CL-two
          'seventeen children'

Moro multiples of ten are decimal rather than quinary; the multiplicative base is *ndréðeə*, the plural of *réð* 'ten', where /nr/ becomes [ndr][9]:

(19) a. *ɲerá*   *ńdréðeə*   *nəgətʃan*
          PL.child   PL.ten   two
          'twenty children'

      b. *ɲerá*   *ńdréðeə*   *reð*
          PL.child   PL.ten   ten
          'one hundred children'

These examples show that the multiplicative base must precedes the cardinal multiplicand in Moro.

7. Adjectives and Relative Clauses

In this section I introduce Moro adjectives and relative clauses. In some cases the behavior of these modifiers is indistinguishable, hence, I have grouped them into a single section. I focus first on adjectives and subject relative clauses in section 7.1, then discuss object relative clauses in section 7.2.

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[9] Cf. the parallel *réð* 'cloth' vs. *ndréð* 'clothes.'

7.1 Adjectives and Subject Relatives

Moro adjectives freely occur as subject relative clauses:

(20) a. *jamalʌ́*   *-sɪ-↓é-↓wə́ndaṯ-a*   **kúkːu**   *j-a-bəg-á*
          PL.camel   SCL-SRC-watch-IPFV   Kuku   CL-RTC-strong-ADJ
          'The camels that are watching Kuku are strong.'

      b. *jamalʌ́*   *-sɪ-↓é-bəg-á*   *j-a-wə́ndaṯ-a*   *kúkːu*
          PL.camel   SCL-SRC-strong-ADJ   CL-RTC-watch-IPFV   Kuku
          'The camels that are strong are watching Kuku.'

Examples (20a-b) form a minimal pair: the main predicate of (20a) is a subject relative clause in (20b), and vice versa. Both examples show that Moro adjectives consistently occur with a H on their final vowel. This final vowel is usually –*á* but other vowels also occur as part of the root, e.g. *geðé* 'green', *koré* 'red,' due to hiatus of –*á* with vowel-final roots.

The vowel following the class marker in Moro indicates a complex array of grammatical information, including finiteness; non-finite clauses lack this vowel and show a distinct paradigm of person prefixes. In root clauses, including complements of bridge verbs such as 'say' or 'think' this vowel is *a/ʌ-*. In subject relative clauses this vowel becomes *é-*. I gloss this vowel SRC for clarity despite the fact that it is also found in the complements of other verbs such as perception verbs ('see', 'think'). Subject relative clauses also occur with geminate concord, shown in the distinction between *s-* and *j-* concord on the relative clause and the main predicates in (20). As before, geminate concord triggers changes on the final vowel of the preceding noun, which is *jamala* in citation form. The downstep on the subject relative *é-* prefix arises due to adjacency with the final H on the root.

As expected, subject relative clauses in isolation occur with an initial /*í*/:

(21) a. Q: *ŋʷ-ðámala*   *ð-ʌ́ŋgʌ*   *ð-é-tʃoɲ-á*
              FOC-SG.camel   CL-which   CL-SRC-hungry-ADJ
              'Which camel is hungry?'

      b. A: *íð:-↓é-↓wə́ndaṯ-a kúkːu*
              'The one that likes Kuku.'

Thus, subject relatives form a class with demonstratives and possessives.

The table below provides the paradigm for an adjectival subject relative:

Table 9. Moro adjective/subject relative clause inflection: *bəgá* 'strong'

Class	SG.N	CL-SRC-A	PL.N	CL-SRC-A	Gloss
g/l	*udʒí*	ꜜ*k-é-bəgá*	*lidʒí*	ꜜ*l-é-bəgá*	'strong person(s)'
g/n	*emerʈ́*	ꜜ*lébəgá*	*nəmerʈ́*	ꜜ*nébəgá*	'strong horse(s)'
j/j	*ajén*	ꜜ*sébəgá*	*ején*	ꜜ*sébəgá*	'strong mountain(s)'
l/ŋ	*ləvərʎ́*	ꜜ*lébəgá*	*ŋəvərʎ́*	ꜜ*ŋébəgá*	'strong stick(s)'
l/l	*láw*	ꜜ*lébəgá*	*ɲáwː*	ꜜ*ɲébəgá*	'strong mosquito(s)'
ŋ/ɲ	*ŋerʎ́*	ꜜ*ŋébəgá*	*ɲerʎ́*	ꜜ*ɲébəgá*	'strong child(ren)'
ð/r	*ðápːʎ́*	ꜜ*ðébəgá*	*rápːʎ́*	ꜜ*rébəgá*	'strong friend(s)'
ð/j	*ðamalʎ́*	ꜜ*ðógəná*	*jamalʎ́*	ꜜ*sébəgá*	'strong camel(s)'

The same observations apply as before, a final H is inserted on all-L roots, and final /a/ undergoes raising.

Like possessives (cf. 10-11), relative clauses can occur without geminate concord. This occurs in two contexts: if other modifiers intervene between relatives and their head noun, and in object position. The first context is shown below with an intervening demonstrative:

(22)   *jamalʎ́*   *-sːʌtísːə*   **j-é-bəg-á**   *j-a-j-ó*
         PL.camel   SCL.that   CL-SRC-big-ADJ   CL-RTC-die-PFV
         'Those camels that are big died.'

In object position the presence of geminate concord correlates with definiteness or specificity (though which is unclear):

(23)   a.   *é-g-a-bʷáɲ-á*   *jamalʎ́*   *-*ꜜ***sː-é-bəgá***
                1SG-CL-RTC-like-IPFV PL.camel   SCL-SRC-strong-ADJ
                'I like the camels that are strong.'

         b.   *é-g-a-bʷáɲ-á*   *jamala*   **j-é-bəgá**
                1SG-CL-RTC-like-IPFV PL.camel   CL-SRC-strong-ADJ
                'I like camels that are strong.'

The absence of geminate concord in (23b) correlates with normal tone and vowel quality on the final syllable of *jamala* 'camels', as expected. However, the modifier *jébəgá* 'which are strong' is identifiably a subject relative clause based on the *é-* prefix. That the alternation in (23) is only permitted in object position is due to a requirement that Moro subjects must be definite or specific. Further evidence for this position is the fact that Moro does not allow *wh*-elements in situ in subject position.

7.2 Object relatives

An example of an object relative clause is provided below:

(24) *jamalʌ́-sː-ə*   *(nə́=ꜜ)kúkːu*   *(nə́=ꜜ)g-ə́-sʌtʃ-ú*
     PL.camel-SCL-this   CMP=Kuku   CMP-CL-NSRC-see-PFV
     'The camel that Kuku saw.'

Several formal properties distinguish object relatives from subject relatives. Relatives formed on oblique arguments and adverbs such as *when* and *how* pattern with object relatives, so this is properly seen as a non-subject relative form (hence NSRC in the gloss). First, the vowel following the class marker is *ə́-* in object relatives, distinguishing them from the *a-* of main clauses or *é-* of subject relatives. Second, the head noun of an object relative takes a suffix segmentally identical to the proximal demonstrative (section 4). The final /í/ of this demonstrative reduces to schwa before an object relative. Contexts have not been found where this demonstrative suffix can be omitted. I take this suffix to be the realization of strong concord on a non-subject relative clause, syncretic here with the proximal demonstrative.

Object relative clauses optionally include the proclitic *nə́=*, analyzed as a complementizer due to the fact that it also introduces certain subordinate clauses. With full nominal subjects, *nə́=* can appear before both the subject and the verb phrase. While *nə́=* is usually optional, it becomes obligatory in some object relatives forms involving a pronominal subject:

(25) *ðamalʌ́-ðː-*   **(n)=í-sʌtʃ-ú*   -1SG-   'the camel that I saw'
     ...   **(n)=ʌ́-sʌtʃ-ú*   -2SG-   '...that you saw'
     ...   *(nə́)=g-ə́-sʌtʃ-ú*   -3SG-   '...that she saw'
     ...   **(n)=ʌ́lə́-sʌtʃ-ú*   -1DU.IN-   '...that you and I saw'
     ...   **(n)=ʌ́lə́-sʌtʃ-ú-r*   -1PL.IN-   '...that we (incl.) saw'
     ...   *(nə́)=ɲʌ́-sʌtʃ-ú*   -1PL.EX-   '...that we (excl.) saw'
     ...   *(nə́)=ɲʌ́-sʌtʃ-ú*   -2PL -   '...that you (pl.) saw'
     ...   *(*nə́)=l-ə́-sʌtʃ-ú*   -3PL-   '...that they saw'

Following standard practice, the asterisk outside of parentheses indicates obligatoriness while the asterisk inside of parentheses indicates that the clitic is disallowed. These examples illustrate that the varying optionality of *nə́=* is phonologically conditioned: *nə́=* is obligatory with vowel-initial prefixes and impossible before /l/ in 3rd person plural forms due to a /*nl/ co-occurrence constraint in Moro, apparently also active across schwa (cf. the numerals 12 and 13 in Table 8; see also Gibbard *et al* 2009, p. 113).

The forms in (25) also illustrate a distinction between object relative clauses on the one hand (and other embedded verbs taking the *ə́*-prefix) and root clauses and subject relatives on the other in that object relative clauses lack the "extra" *g*-class marker which occurs between first and second person prefixes and the clause-typing vowel (e.g. (23-24)).

Evidence that this demonstrative element in non-subject relative clauses is the correlate of strong concord comes again from fragment answers. As the answer to the question "Which camel is hungry?" (cf. 20a) one could respond *ðamalʌ́ðːənísʌtʃú* 'the camel that I saw' (cf. 24), but never **ínísʌtʃú*. While *íðːənísʌtʃú* 'this one that I saw' is a grammatical noun phrase, it would not be an appropriate answer to the question in (20a). This might be because the demonstrative element *íðːi* 'this' is interpreted in such a response, resulting in too many foci.

8. Word order and strong concord

Word order in Moro noun phrases follows the schema below:

(26)   WORD ORDER IN MORO NOUN PHRASES

a.	noun >	{demonstrative, possessive} > numeral >	adjective* relative clause*
b.	*náḍám*	*n-ʌtínːə*	*n-əgətʃan*	*n-ór↓é*
	PL.books	SCL-those	CL-two	CL-red-ADJ
	'those two red books'			

This word order is somewhat simplified. Examples (10-11) showed that possessive noun phrases can follow demonstratives if they do not take strong concord. This is not true for possessive pronouns, which cannot occur with demonstratives, e.g. **náḍám nʌtínʌ nʌŋənʌŋ* 'books those my.' These elements must be followed by numerals and then by relative clauses and adjectives. The latter elements can recur, as indicated by the asterisk.

Evidence that the word order in (26) is the default word order in Moro comes from strong concord. Strong concord can occur on elements which are not directly adjacent to the adjective, but it must follow modifiers showing weak concord. I take such occurrences of strong concord to be instances of appositive, right-dislocated, modifiers:

(27) a. *é-g-a-bwáɲ-á*   *surʌ́-sɪ-ʌtísːə*   *j-ógon-á*   *↓j-ɔ́-↓kúkːu*
         1SG-CL-RTC-like-IPFV SG.picture-SCL-that CL-big-ADJ   CL-POS-kuku
         'I like that big picture of Kuku.'

      b. *égabwáɲá*   *surʌ́-sɪ-ʌtísːʌ*   *j-ógoná*   *ísː-↓ɔ́-↓kúkːu*
         I-like   picture-SCL-that   CL-big   SCL-POS-Kuku
         'I like that big picture, the one of Kuku.'

      c. *égabwáɲá*   *surʌ́-sɪ-ʌtísːʌ*   *ísː-↓ɔ́-↓kúkːu*   *ísː-↓jógoná*
         I-like   picture-SCL-that   SCL-POS-Kuku   SCL-big
         'I like that picture, the one of Kuku, the big one.'

      d. * *égabwáɲá*   *surʌ́-sɪ-ʌtísːʌ*   *ísː-↓ɔ́-↓kúkːu*   *j-ógoná*
         I-like   picture-SCL-that   SCL-POS-Kuku   CL-big

First, note that the "possessive" noun phrase *jɔ́kúkːu* 'of Kuku' can occur noun phrase finally, after an adjective (27a). However, 'Kuku' in this noun phrase is not a possessor but rather an argument of *súrʌ* 'picture.'

The pattern in (27) show why multiple occurrences of strong concord should be considered instances of apposition or right dislocation. First, (27b-d) show that modifiers expressing weak concord cannot follow those showing strong concord. This reveals that second occurrences of strong concord interrupt the normal sequence of nominal modifiers in (26). Second, (27c) shows that the initial /í/ in recurrent instances of strong concord does not phonologically fuse with an earlier modifier, nor do these modifiers show ordering restrictions. This indicates that these secondary occurrences of strong concord are separate phonological phrases, syntactically distinct from the noun phrase proper.

More striking evidence comes from putative cases of extraposition, where a modifier is separated from its host noun phrase across a distinct syntactic constituent, such as the verb:

(28) *áḍám*   *k-ʌtíkə*   *g-id-ú*   *íkː-↓é-tɪ-á*
       book   SCL-that   CL-RTC.fall-PFV SCL-SRC-small-ADJ
       'That book fell, the small one.'

As in (27), the extraposed (right-dislocated) modifier must show strong concord with an unreduced initial /í/. In light of the data in (27-28), I conclude that secondary occurrences of strong concord are always instances of appositional right dislocation, and should not be seen as evidence for free word order within the noun phrase.

This excursus on right dislocation permits the articulation of a generalization about the position of strong concord within the noun phrase: strong concord must occur directly after the noun. In fact, we can reformulate the word order as below:

(29)   noun–SCL–{dem/pos/rel}   > CL-num   > CL-modifier*

While one could attempt to identify all instances of strong concord with the proximal demonstrative, such a move would raise as many questions as it answered; not all noun phrases with strong concord are interpreted with proximal demonstrative meanings, making the connection tenuous. Instead, the proximal demonstrative appears to be grammaticalizing to a more general marker of definiteness/specificity in Moro noun phrases.

The initial /í/ on strong concord is of particular interest. One hypothesis about its status is as a cognate of the Bantu augment vowel, a noun prefix associated with definiteness or specificity in many Bantu languages (de Blois 1970, Dewees 1971, von Staden 1973, Hyman and Katamba 1993, Progovac 1993, a.o.). While augment prefixes generally occur on nouns, they also occur on modifiers in many Bantu languages.

An additional connection between Moro and Bantu is provided by the word order in (26) itself. While Greenberg (1963) observed that this word order is crosslinguistically dispreferred, the word order is common in many Bantu languages, e.g. Kiswahili (G.42, Carstens 1991 *et seq.*), Kîîtharaka (E.54, Muriungi 2008), Kikuyu (E.50, Greenberg 1963), Nkore-Kiga (J.10, Taylor 1985), and Xitsonga (S.53, Lee & Bibane 2011). Together, strong concord and the word order of Moro noun phrases provide a further connection between Moro and Bantu languages beyond the evidence from noun classes discussed by Schadeberg (1989).

9. Conclusion

To conclude, is now clear that agreement/concord in Moro noun phrases can be split into two forms, a strong form, restricted to genitives, possessives, and definite modified noun phrases including subject relative clauses, and a weak form, which occurs elsewhere.

With regard to possession, Moro nouns were shown to split into alienable and inalienable, the latter class being distinguished by dedicated possessive suffixes. The Moro numeral system was shown to use a primary quinary

counting system with a decimal subsystem for multiples of ten. Subject relative clauses and adjectives were shown to formally identical in the cases examined. Object relative clauses are clearly distinct, not least in that they allow an overt complementizer, absent in subject relatives.

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