Existential quantification in Luragooli: Distribution and semantics of *ku*

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Quantification in Bantu languages

- Apart from a few mainly descriptive studies (Zerbian & Krifka 2008, Landman 2015) quantification in Bantu languages has been largely neglected
- In this talk, we'll focus on one aspect of the quantificational system in Luragooli (Luhya, Bantu), namely the particle *ku*
- The goal here is to add to the nascent literature on quantification in Bantu languages, as well as introduce some theoretically challenging data to recent cross-linguistic studies of quantification (Matthewson 2001, 2013)

Sample data

- In its most basic use, *ku* is a particle which occurs post-verbally and appears to provide existential DP(/NP)-quantification, as exemplified in (1).

(1) a. n-so:m-i vi-tabu.
1SG.S-read-FV 8-book
'I read the books.'

b. n-so:m-i **ku** vi-tabu.
1SG.S-read-FV KU 8-book
'I read some of the books.'

- We'll show that this is an overly simplistic view of *ku*

Basic conceptual proposal

ku has an underspecified meaning of existential quantification, compatible with a range of interpretations dependent on the qualities of the predicate it combines with.

Claim 1 : *ku* is an A-quantifier that is associated with the verb

Claim 2 : Due to its underspecification, *ku* can be interpreted as providing (something like) existential quantification over a number of different items, including nouns, verbs, adjectives, and so on

Roadmap

- Background on Luragooli
- Data on the distribution and interpretation(s) of *ku*
  - Comparison with other Luragooli quantifiers
  - *ku* in unembedded contexts
- Single unified meaning: A-quantifier expressing existential quantification, underspecified!
- Interpretation of *ku* in embedded contexts
- Wrap-up

Background on Luragooli

- Bantu language in the Luhya subfamily
- Spoken in western Kenya and Tanzania by approximately 618,000 people (Ethnologue 2015)
- Also called Maragoli, Logoori, Lulogoori, and Lugooli
- Our data is from one male native speaker, collected in Los Angeles, CA, USA from 2014-2015

Grammatical features of Luragooli

- 17 noun classes
  - Generally in singular/plural pairs
- No overt determiners
- Strictly SVO
- Tense/aspect is marked on the verb through prefixes, suffixes, and tone
- Has two tones (high and non-high), which we do not mark (Samuels & Paster 2015)
- Only clause-level negation (typically marked clause finally); no nominal negation (Zerbian & Krifka 2008)
- Largely wh in situ

Variables when interpreting *ku*

- **Unembedded** versus **embedded**
  - By **embedded**, we refer to environments embedded under the scope of a semantic operator, e.g. negation, question operators, and so on
- **Preverbal** versus **postverbal**
  - We'll mainly limit our discussion to the post-verbal use, although we'll see a few examples of pre-verbal *ku*, and we've put more discussion in the appendix.

Comparison of *ku* with other Luragooli quantifiers

- Landman (2015) investigates a few NP/DP-level quantifiers in Luragooli, including *vuri* 'every', *-o:si* 'all', *-la(la)* 'one', and *-i:nge* 'many, much'.
- *ku* is fundamentally different from other Luragooli (DP-)quantifiers in three respects:

1. Lack of agreement
2. Syntactically associates with the verb
3. Inability to take subject scope

Comparison to other quantifiers 1: lack of agreement

- Unlike other quantifiers, *ku* does not agree with its argument it appears to scope over.

(2) a. Imali y-i:t-i ma-nyonyi **ma-lala**
1Imali 1-kill-FV 6-bird 6-one
'Imali killed **some** birds'

b. Imali y-i:t-i **(*ma-)ku** ma-nyonyi
1Imali 1-kill-FV (6-)KU 6-bird
'Imali killed **some** birds'

- (NB: There is one other non-agreeing quantifier, *vuri*, 'every', which obligatorily appears with an NP argument, unlike *ku*. See Landman (2015) for discussion of other quantifiers in Luragooli.)

Comparison with other quantifiers 2: associates with predicate

- *ku* does not form a constituent with its DP argument.
  - For instance, no variant of (3d) is a grammatical response to *What did Sira kill?*, while (3b) and (3c) are acceptable.

(3) a. What did Sira kill?
b. ma-nyonyi ga-o:si
6-bird 6-all
'All the birds.'
c. ma-nyonyi ma-lala
6-bird 6-one
'Some birds.'
d. * ku ma-nyonyi
KU 6-bird
Intended: 'Some birds.'

Comparison with other quantifiers 2: associates with predicate

- *ku* + DP cannot be coordinated

(4) *Imali y-i:t-i [ku ma-nyonyi] na [ku zi-si:mba]
1Imali 1-kill-FV KU 6-bird and KU 10-lion
intended: 'Sira killed some birds and some lions.'

Comparison with other quantifiers 2: associates with predicate

- Post-verbal *ku* invariantly occurs directly after the predicate, even when the object has been A-bar moved away (5b).

(5) a. * n-so:m-i vi-tabu ku
1SG.S-read-FV 8-book KU
Intended: 'I read some of the books'

b. vi-ndeki vi-a Sira a-ror-i ku
8-what 8-COMP 1Sira 1-see-FV KU
'What are some of the things that Sira saw?'

c. * ku vi-ndeki vi-a Sira a-ror-i
KU 8-what 8-COMP 1Sira 1-see-FV
intended: 'What are some of the things that Sira saw?'

Comparison with other quantifiers 3: lack of subject scope

- *ku* cannot be used to express quantification over a subject:

(6) (ku) ma-nyonyi (ku) ga-eemb-i.
KU 6-bird KU 6-sing-FV
1) *'Some of the birds sang.'
2) (means: 'So, the birds sang.')

- Even when *ku* remains post-verbal, it is never interpreted as scoping over the subject:

(7) ma-nyonyi ga-eemb-i ku.
6-birds 6-sang-FV KU
1) *'Some of the birds sang.'
2) 'The birds sang a little.'

- We return to the second reading shortly.

Comparison with other quantifiers 3: lack of subject scope

- The lack of subject scope applies to derived subjects e.g., unaccusatives, passives.

(8) a. zi-nyo:mba zi-he-e ku.
10-houses 10-burn-FV KU
1) *'Some of the houses burned.'
2) The houses partially burned. (Unaccusative)

b. vi-tabu vi-soom-u-e ku
8-book 8-read-PASS-FV KU
1) *'Some of the books were read'
2) 'The books were partially read' (Passive)

- Thus, *ku* appears to provide DP-quantification only of surface objects.
  - Caveat: A-bar moved objects can reconstruct below *ku*.

Comparison with other quantifiers 3: lack of subject scope

- Importantly, this differentiates *ku* from the other quantifiers, which are compatible with subjects

(9) va-ndu va-lala va-sye:v-i
2-person 2-one 2-danced-FV
'Some people danced.' Landman, 2015, ex 3

- Note that Landman (p.c.) observes that, at least for some speakers, certain quantifiers can be stranded in A-movement, which is not true of *ku* (cf, passive example above)

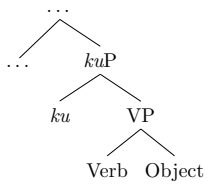
Summary of comparison to other quantifiers

1. Does not agree
2. Always occurs directly after the predicate
3. Cannot combine with any DP other than the object

- This array of properties calls for a syntactic explanation.

Proposal: Syntax of *ku*

ku merges above the verb phrase (and subsequent head movement of the verb derives the surface order).



Accounting for the differences

1. **Does not agree:**
   Assuming that the domain of agree/concord is internal to the DP/NP, then *ku* is outside of this domain
2. **Associates with the predicate:**
   ku takes the VP as a complement, and so does not associate with the DP directly; it's an A-quantifier.
3. **Lack of subject scope:**
   ku can only combine with an element in its syntactic domain

- In the next section, we discuss the consequences of this syntactic analysis with respect to possible interpretations.

Interpretations of unembedded *ku*

- While most of the examples so far have shown quantification over DP elements, *ku* does not solely quantify over DPs but can be interpreted as quantifying over other predicates as well
  - The general constraint is that *ku* can quantify over anything in its syntactic domain that satisfies the condition of "gradability"
- In this section, we discuss the various interpretative properties that are available for *ku* when it is outside the scope of a semantic operator – i.e., **unembedded**

Unembedded context: DP quantification

- *ku* can be interpreted as taking DP_{object} scope when it combines with a transitive predicate with a non-atomic object:

(10) n-de-e ku vi-tungguru.
1SG.S-eat-FV KU 8-onion
'I ate some onions.'

- Can be interpreted as scoping over plurals (10), (non-atomic) singulars (11), and mass terms (12), always yielding the interpretation 'some'

(11) n-de-e ku ki-tungguru.
1SG.S-eat-FV KU 7-onion.
'I ate some onion.'

(12) nda-nw-a ku ma-aze.
1SG.S-drink-FV KU 6-water
'I drank some of the water.'

- Note that it can take definite or indefinite arguments (no morphological contrast in Luragooli)

Unembedded context: VP-quantification

- Intransitive VP-quantification is generally translated as 'a little (bit)'

(13) a. Sira a-ngo:r-i.
1Sira 1-stretch-FV
'Sira stretched.'

b. Sira a-ngo:r-i ku.
1Sira 1-stretch-FV KU
'Sira stretched a little bit.'

(14) a. Sira a-ngo:r-i.
1Sira 1-draw-FV
'Sira drew.'

b. Sira a-ngo:r-i ku.
1Sira 1-draw-FV KU
'Sira drew a little bit.'

Unembedded context: VP-quantification

- This reading occurs with predicates that have a Process (Vendler 1967, Dowty 1979)
  - Any predicate that does not consist solely of an instantaneous occurrence (e.g. semelfactives and achievement verbs).
- This interpretation is not available with any other NP/DP-quantifier, e.g. *la(la)* 'one'

Non-process verbs

- Verbs like *die* and *kill* are typically assumed to lack a process portion of the event, and so are pragmatically infelicitous with *ku*

(15) a. Sira a-kuz-i.
Sira 1-die-FV
'Sira died.'

b. #Sira a-kuz-i ku.
Sira 1-die-FV KU
#'Sira died a little.'

(16) a. Imali y-iit-i ri-nyonyi.
1Imali 1-kill-FV 5-bird
'Imali killed the bird.'

b. #Imali y-iit-i ku ri-nyonyi.
1Imali 1-kill-FV KU 5-bird
#'Imali partially killed the bird.'

Unembedded context: AP-quantification

- *ku* can also be interpreted as scoping over AP-predicates
- Typically results in the reading 'slightly'

(17) a. vi-tabu ni vi-ritu ku.
8-books COP 8-heavy KU
'The books are slightly heavy.'

b. i-nyo:mba ni y-a ovo-doge ku.
9-house COP 9-COMP 15-yellow KU
1) 'The house is yellowish.'
2) 'Part of the house is yellow.'

- The two readings in (17b) do not reflect a difference between AP-level vs. subject-level scope; rather, both readings are compatible with an object being "slightly" yellow

Unembedded context: ambiguities

- In combination with Incremental Theme predicates, *ku* can be interpreted as either having VP-level or DP-level scope (Dowty 1991)

(18) a. Imali a-samb-i zi-nyo:mba.
1Imali 1-burn-FV 10-house
'Imali burned the houses.'

b. Imali a-samb-i ku zi-nyo:mba.
1Imali 1-burn-FV KU 10-house
1) 'Imali partially burned the houses.' (VP-level)
2) 'Imali burned some houses.' (DP-level)

DP-level scope interpretation

(19) Imali a-samb-i ku zi-nyo:mba.
1Imali 1-burn-FV KU 10-house
'Imali burned some houses.'

VP-level scope interpretation

(20) Imali a-samb-i ku zi-nyo:mba.
1Imali 1-burn-FV KU 10-house
'Imali partially burned the houses.'

Unembedded data summary

- The underspecified meaning of *ku* gives rise to a number of different interpretations, depending on the type of predicate it combines with

Combines with	**Meaning**
Transitive, non-atomic DP_{object}	'some DP_{object}'
Process predicates	'partially,' 'a little bit'
Adjectival predicates	'slightly'

Table: Interpretation of *ku*, depending on predicate qualities

- Although it is an A-quantifier, *ku* is compatible with interpretations similar to both D-quantifiers and A-quantifiers in English
- So far, we have not found any context in which post-verbal *ku* is ungrammatical: some reading is always available
  - Caveat: Our data on nominal predicates (*Sira is a teacher*) is inconclusive, though *ku* is grammatical in combination with these predicates

Embedded *ku*

- A consequence of claiming that *ku* provides existential quantification is that it also accounts for the interpretation(s) of *ku* in embedded contexts, in which *ku* occurs under the scope of a semantic operator
  - Semantic operators include negation, question operators, and so on
- In embedded contexts, *ku* is variously interpreted as *any, ever*, and *at all*
- Again, the interpretation of *ku* depends on the qualities of the predicate it combines with

Combines with	**Unembedded**	**Embedded**
Transitive, non-atomic DP_{object}	'some DP_{object}'	'any DP_{object}'
Process predicates	'partially,' 'a little bit'	'ever,' 'at all'

Table: Interpretations of *ku* in unembedded and embedded contexts, depending on predicate qualities

Embedded context: 'ever'

- Negating a VP-level scope interpretation of *ku* leads to the reading 'not ever'/'never'
  - Recall that negation is always expressed clause-finally

(21) a. va-eemb-a da.
2-sing-FV NEG
'They didn't sing.'

b. va-eemb-a ku da.
2-sing-FV KU NEG
'They never sang.'
= 'There does not exist an event of them singing'

- Luragooli clause-final negation morphemes *da*, *da:ve*, and *mba* always take clause-level scope

Embedded context: 'any'

- Negating a DP-level scope interpretation of *ku* leads to the reading *any*

(22) a. mu-ndu a-re-e ma-barabandi da:ve.
1-thing 3SG.S-eat-FV 6-loquat NEG
'Nobody ate loquats.'

b. mu-ndu a-re-e ku ma-barabandi da:ve.
1-thing 3SG.S-eat-FV KU 6-loquat NEG
'Nobody ate any loquats.'
= 'There do not exist some loquats that someone ate.'

Other embedded contexts

- We have tested the interpretation(s) of *ku* in a range of embedded contexts
- We have found the 'any,' 'ever,' 'at all,' and so on readings of *ku* in effectively all environments in which NPIs are licensed
  - That is, typically downward entailing and/or non-veridical environments (Giannakidou 2002)

Other embedded contexts

Environments

Negation and negative indefinites
They never sang.

Questions
Did you eat any mandazi?

Inherently negative verbs (*deny*, *refuse*, *doubt*, etc.)
Sira denied eating any mandazi.

RCs with a universally quantified head
Every man who ever robbed a store felt guilty.

'exactly *n*'
Exactly 100 people have ever climbed Mt. Kilimanjaro.

'without'
We left Kenya without seeing any elephants.

'before'
We left Kenya before seeing any elephants.

Summary of interpretations in embedded contexts

- This is compatible with assuming
  1) a basic existential meaning of *ku*
  2) that *ku* scopes under negation/other operators
- Like in unembedded contexts, the interpretation of *ku* in embedded contexts depends on the qualities of the predicate it combines with

In summary

- Showed that *ku* is an A-quantifier and cannot be a D-quantifier
- Presented data on the available interpretations of *ku* in unembedded and embedded contexts
  - 'some' in combination with transitive predicates with non-atomic object DPs
  - 'partially' in combination with Process predicates
  - 'slightly' in combination with adjectival predicates
- Proposed that *ku*
  1) scopes over the predicate
  2) has a basic meaning of existential quantification
  3) specific readings arise depending on the qualities of the predicate that *ku* combines with

Thank you!

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Challenging data: 'sometimes'

- When *ku* combines with a stative predicate, the reading 'sometimes' is also available

(23) a. ku-igiz-a.
1PL.S-teach-FV
'We teach.'

b. ku-igiz-a ku.
1PL.S-teach-FV KU
'We teach sometimes.'

- Still has a basic existential reading, but seems to range over times
- Given our syntactic story, it's somewhat unclear how to account for this
- Supports the notion that *ku* will effectively always find something gradable to combine with: in this case, times

Challenging data: 'so,' 'happened to,' 'once'

- Only occurs with the preverbal, typically clause-initial, usage of *ku*

(24) a. ma-nyonyi ga-buruk-i.
6-bird 6-fly-FV
'The birds flew away.'

b. ku ma-nyonyi ga-buruk-i.
KU 6-bird 6-fly-FV
'So, the birds flew away.'

(25) a. Sira y-ombak-a zi-nyo:mba.
Sira 3SG.S-build-FV 10-house
'Sira built houses.'

b. Sira ku y-o:mbak-a zi-nyo:mba.
Sira KU 3SG.S-build-FV 10-house
'So, Sira built houses.'

Challenging data: 'so,' 'happened to,' 'once'

- Different placement in the structure from postverbal *ku*
  - Is it scoping over the entire clause?
  - Could it be overt existential closure?
- Again, basic existential meaning: 'There exists an event of birds flying'
- Possible tonal difference: our consultant frequently reports that preverbal *ku* has high tone, whereas postverbal *ku* has low tone

ku and nominal predicates

(26) a. nze nzigiza
1SG.S teacher
'I'm a teacher.'

b. nze nzigiza ku.
1SG.S teacher KU
1) 'I'm a teacher sometimes.'
(= 'I teach sometimes.')
2) 'I'm a TEACHER teacher.'

ku co-occurring with D-quantifiers

- When *ku* co-occurs with a universal D-quantifier, the VP-level 'partially' interpretation is still available

(27) a. n-re-e vi-tungguru vi-o:si.
1SG.S-eat-FV 8-onions 8-all
'I ate all the onions.'

b. n-re-e ku vi-tongguuru vi-o:si
1SG.S-eat-FV KU 8-onion 8-all
'I ate a bit of all the onions.'

(28) a. i-nyo:mba i-o:si ni y-a ovu-du:ge.
9-house 9-all COP 9-COMP 15-yellow
'The whole house is yellow.'

b. i-nyo:mba i-o:si ni y-a ovu-du:ge ku.
9-house 9-all COP 9-COMP 15-yellow KU
'The whole house is yellowish.'

ku and scalar implicature

- The English existential quantifier *some* can give rise to a scalar implicature:

(29) John ate some of the cookies.
$\rightsquigarrow$ John didn't eat all of the cookies.

(30) $\Diamond P \rightsquigarrow \neg\forall P$

ku and scalar implicature

- We do not find a strong implicature of this type for Luragooli *ku*:

(31) a. Imali a-samb-i ku zi-nyomba. Na he:ne,
Imali 3SG.S-burn-FV KU 10-house in fact
a-samb-i zi-o:si!
3SG.S-burn-FV 10-all
?'Imali burned some of the houses... in fact, she burned all of them!'

b. Imali a-samb-i zi-nyomba zi-ndara. Na he:ne,
Imali 3SG.S-burn-FV 10-houses 10-some in fact
a-samb-i zi-o:si!
3SG.S-burn-FV 10-all
'Imali burned some of the houses... in fact, she burned all of them!'