Number-neutrality and optional number marking in Mbya Guarani

Guillaume Thomas and Germino Duarte

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University of Alberta

1 Introduction

- Most Mbya nouns license reference to single entities or pluralities without number marking:

  "Com os nomes comuns não pessoais não há marcação da pluralidade *ita* 'pedra(s)', *oo* 'casa(s)', *yvyra* 'árvore(s)', *mboi* 'cobra(s)', etc. Às vezes isto que se chama número geral (*loc. cit.*) resulta em ambiguidade quanto ao número.

  — Dooley (2015)

- Many higher animate nouns also license plural reference without plural marking:

(1) Angy   katu   jurua   gui   ja-jogua.
     nowadays CONT   non.indigenous SRC   A1.PL.INC-buy
     'Nowadays, we buy [those things] from the juruas.' (Duarte 2013)

- These facts point to a number-neutral grammar for count nouns. Yet, there are several wrinkles in this simple picture:

  ‣ Number marking with the suffix *-kue ~ -gue* is obligatory with a subset animate nouns: *avakue* ('men'), *kuñague* ('women'), *kyrĩgue* ('children'), …

  ‣ Otherwise number-neutral animate nouns can optionally combine with the enclitic plural marker *kuery*, e.g., *jurua kuery* ('(the) jururas')

- This raises several questions about the grammar of plural marking in the language:

  ‣ Is the language number-neutral?
  ‣ If nouns are number neutral, what is the contribution of the optional number marker *kuery* to the interpretation of noun phrases?
  ‣ Is there any grammatical property that explains the obligatoriness of number marking with nouns that can be suffixed with *-kue*?

- A proposed analysis:

  ‣ Nominal roots are number neutral in Mbya.

  ‣ Nouns pluralized by *-kue ~ -gue* are derived from quality denoting Property Concept roots, *-kue ~ -gue* itself being an exponent not only of plurality but of an operation that maps qualities to individuals.

  ‣ *Kuery* conveys not only plurality but social cohesiveness, explaining away its apparent redundancy with number neutral roots.

2 Basic Facts

2.1 (In)definiteness and number neutrality

- Bare nouns can be used as singular definites or indefinites:

(2) Yma   ete   xe-r-amoĩ   o-guereko   ka'i.
    old   INT   B1.SG-LNK-grandfather   A3-have   monkey
    'A long time ago, my grandfather had a monkey.'

    Ka'i   ma   i-mba'evyky   raxa   va'e.
    monkey   BDY   B3-play   excessively   REL
    'The monkey was excessively playful.' (Veríssimo, 2002)

- Example of semantic plurality with numerals and quantifiers:

(3) Ha'e   rami   a   py   je   o-ĩ   avei   mokoĩ   oo.
    3   SIM   NMLZ   LOC   HSY   A3-be   also   two   house
    'There were also two houses there.' (GUN001R003)

(4) Tekoa   ha'e javi   rupi   o-guata   o-iko-vy.
    village   all   LOC   A3-walk   A3-live-CONV
    'He lived in all the villages.' (Grupioni 2007)

- But as we'll see, numerals and quantifiers don't provide compelling evidence of number neutrality.

- Better diagnostics: new or anaphoric plural reference with bare nouns:

(5) Ha'e   vy   je   o-exa   yvyra   rapytakue   kua   py   ei   o-ĩ   va'e.
    3   SS   HSY   A3   tree   trunk   whole   in   honey   A3-be   REL
    'He saw that there was honey in the trunk of a tree.'

    Ha'e   vy   je   o-nhemboja   o-vy   **eiru**   o-veve   o-kuapy-a   katy.
    3   SS   HSY   A3-leave   go-CONV   bee   A3-fly   A3-be.PL-NMLZ   toward
    'And he approached the place where the bees were flying.'

    […]

    Ha'e   rã   je   aipo-e'i   o-je-upe   a'e: "**Eiru**   tu   i-nharõ   vaipa
    3   DS   HSY   INTJ-say.3   3-REFL-to   INT   bee   MIR   B3-angry   INT
    rima   ra'e."
    CORR   MIR
    'So he told himself: "The bees are very angry."' (Veríssimo 2002)

2.2 The plural suffix -kue

2.2.1 Distribution

- A subset of animate nouns bear the plural suffix *-kue ~ -gue*:

  ‣ Dooley's (2016) list: *avakue* ('men'), *kunhague* ('women'), *tujakue* ('old men'), *guaimigue* ('old women'), *kyrĩgue* ('children'), *kunumigue* ('teen boys'), *kunhataĩgue* ('teen girls'), *pyaukue* ('young people')

  ‣ Corpus[1]: *avakue, kunhague, kunumigue, tujakue, guaimigue, kyrĩgue, kunhataĩgue*

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[1]Approximately 32,000 words: Dooley 2011, Duarte 2013, Grupioni 2007, Veríssimo 2002.

- Plural suffixation is optional with numerals and quantifiers:

(6) Yma je i-kuai mokoĩ kunumi(-gue).
old HSY B3-be.PL two boy-PL
'A long time ago, there were two boys.'

(7) Pavẽ ava(-kue) i-kuai kokue py.
all man(-PL) B3-be.PL field LOC
'All the men are in the field.'

- Plural suffixation is obligatory for new or anaphoric plural reference with bare nouns:

(8) A-echa kunumi ka'aguy py.
A1.SG-see boy forest LOC
'I saw a boy/#boys in the forest.'

(9) Heta-'i kunumi i-kuai kokue py.
many-DIM boy B3-be.PL field LOC
'There were many boys in the field.'

Kuñataĩ-gue i-kuai avi.
girls-PL B3-be.PL also
'There were also girls.'

Kunumi*(-gue) o-ñevanga pelota reve.
boy-PL A3-play ball with
'The boys were playing with a ball.'

2.2.2 Interpretation

- Nouns pluralized with *-kue ~ -gue* retain atoms (singular entities) in their extension. In other words, they have cumulative reference:

(10) Nd-a-echa-i kunumi-gue escuela py.
NEG-A1.SG-see-NEG boy-PL school at
'I didn't see any boys at school.'
True if no boys were seen.
False if exactly one boy that was seen.

2.3 The plural enclitic *kuery*

2.3.1 Distribution

- *Kuery* is used as an associative plural with proper names (*Para kuery*, 'Para's family') and serves to form third person plural pronouns *ha'e kuery* ('they')

- *Kuery* is also used as an optional marker with some common nouns:

  ‣ According to Dooley, *kuery* is only attested with nouns that "designam pessoas, animais domésticos (que se aderem às pessoas) ou animais vistos como tendo características de pessoas."

  ‣ Some Mbya speakers from Paraguay appear to more readily accept the use of *kuery* with inanimate nouns, e.g., *pakova kuery* ('bunch of banana'), this may be due to the influence of Paraguayan Guarani, where the cognate *kuera* is not restricted to animates (although see Estigarribia 2020).

‣ Nominal stems and phrases attested in our corpus (excluding associative and pronominal uses):

– Kinship terms: *-yke'y kuery* ('older brother of ♂'), *-ajy kuery* ('daughter of ♂'), *-a'y kuery* ('sons of ♂'), *-amoĩ kuery* ('grandfathers'), *-emiarirõ kuery* ('grandchildren of ♀'), *-amymino kuery* ('grandchildren of ♂'), *-jaryi kuery* ('grandmothers'), *-xy kuery* ('mothers'), *-atyu(rã) kuery* ('father in law of ♂'), *-eindy kuery* ('older sisters of ♂'), *-uu kuery* ('fathers'), *-a'ychy kuery* ('wives'), *-etarã kuery* ('parents')

– Ethnonyms: *heta va'e kuery* ('white people (those who are many)'), *yvypo kuery* ('white people (those who live on this earth)'), *jurua kuery* ('white people (juruas)'), *Mbya kuery*, *Alemán kuery*, *Ruso kuery*, *Chiripa'i kuery*, *Brasilero kuery*, *Paĩ kuery*, *Guarani kuery*, *Español kuery*, *Paraguayo kuery*, *Tupi kuery*

– Individuals by social status or function: *chondaro kuery* ('chondaros'), *-uvicha kuery* ('leaders'), *karai kuery* ('spiritual leaders'), *kuña karai kuery* ('female spiritual leaders'), *yvara'ija kuery* ('spiritual leaders (masters of the yvyra'i)'), *opygua kuery* ('spiritual leaders (those from the prayer house)'), *medico kuery*, *doctor kuery*, *kavo kuery* ('guards'), *cacique kuery*, *gendarme kuery*, *politico kuery*, *ministro kuery*, *ecologia kuery*, *juez federal kuery*, *militar kuery*, *periodista kuery*, *policía kuery*, *comisario kuery*, *empresario kuery*

– Individuals by generation: *ymagua kuery* ('ancestors (those from long ago)'), *ypy kuery* ('ancestors (those from the beginnings)'), *mitã kuery* ('children')

– Individuals by location or settlement: *-ekoa kuery* ('villages'), *-ekoa pygua kuery* ('villagers'), *colono kuery*, *paisano kuery*

– Individual by alliance: *-irũ kuery* ('friends'), *apixa kuery ('colleagues')*, *chegente kuery*

– Spiritual beings: *ñe'ẽ kuery* ('spirits'), *chereno'ã kuery* ('gods (those who sustain me)')

– Animals: *eiru kuery* ('bees'), *vexa'i kuery* ('sheep'), *ka'i kuery* ('monkeys')

– Inanimates: *yvy regua kuery* ('crops')

• *Kuery* can combine with bare nouns as well as with numeral and quantified noun phrases:

(11) A-echa   jurua   kuery ka'aguy py.
      A1.SG-see non.indigenous PL   forest   in
      'I saw juruas in the village.'

(12) Yma je   i-kuai   mokoĩ jurua   kuery.
      old HSY B3-be.PL two   non.indigenous PL
      'A long time ago, there were two juruas.'

(13) Pavẽ jurua kuery i-kuai   kokue py.
      all   man   PL   B3-be.PL field   in
      'All the juruas are in the field.'

2.3.2 Interpretation

• Dooley (2015) describes *kuery* as a collective marker: "com nomes pronomes ou nominalizações pessoais não atributivos ocorre a palavra paroxítona *kuery* 'coletivo', que indica um conjunto mais ou menos coeso de pessoas ou animais"

• *kuery*, however, does not restrict the noun phrase it marks to collective predication, being compatible with distributive and reciprocal predications:

(14) Kova'e jurua   kuery i-puku.
      DEM   non.indigenous PL   B3-tall
      'These juruas are tall.'

(15) Kova'e jurua   kuery o-jo-guero'a.
     DEM   non.indigenous PL   A3-RECIP-fight
     'These juruas fought with one another.'

- Rather, *kuery* appears to convey that the referent of the noun forms a socially cohesive group, regardless of the distributive or collective nature of the predication.

- In the following example, *kuery* is used to convey that the bees fly out as a swarm:

(16) Ha'e vy je o-exa yvyra rapytakue kua py ei o-ĩ va'e.
     3   SS HSY A3   tree   trunk   whole LOC honey A3-be REL
     'He saw that there was honey in the trunk of a tree.'

     Ha'e vy je o-nhemboja o-vy **eiru** o-veve o-kuapy-a   katy.
     3   SS HSY A3-leave   go-CONV bee   A3-fly A3-be.PL-NMLZ toward
     'So he approached the place where the bees were flying.'

     Ha'e rã je **eiru kuery** o-ẽ-mba   vyve o-pipa   rive nhande-'i
     3   DS HSY bee   PL   A3-leave-all SS   A3-sting INT   A1.PL.INC
     va'e.
     REL
     'Then the bees flew out and stung the guarani.'

- Like *-kue ~ -gue*, *kuery* is a weak plural that includes atoms in its denotations:

(17) Nd-a-echa-i   mymba   kuery kokue py.
     NEG-A1.SG-see-NEG domestic.animal PL   field   LOC
     'I didn't see any animal in the field.'
     True if no animals were seen
     False if exactly one animal that was seen

2.3.4 Comparing the distributions of *kuery* and *-kue ~ -gue*

- *Kuery* can be used instead of *-kue ~ -gue* without loss of grammaticality:

(18) Yma je i-kuai   mokoĩ kunumi kuery.
     old   HSY B3-be.PL two   boy   PL
     'A long time ago, there were two boys.'

(19) Pavẽ ava kuery i-kuai   kokue py.
     all   man PL   B3-be.PL field   LOC
     'All the men are in the field.'

(20) Heta-'i   kunumi i-kuai   kokue py.
     many-DIM boy   B3-be.PL field   LOC
     'There were many boys in the field.'

     Kuñataĩ kuery i-kuai   avi.
     girls   PL   B3-be.PL also
     'There were also girls.'

     Kunumi kuery o-ñevanga pelota reve.
     boy   PL   A3-play   ball   with
     'The boys were playing with a ball.'

- The contrary is of course not true: *kuery* is attested with a wider range of nouns.

- In previous sections, we argued that nouns that are compatible with *-kue ~ -gue* require plural marking for plural reference in the absence of quantifiers or plural numerals. The same is not true of other nouns. The following pair of examples illustrates this contrast:

(21) Kuee   opy   o-kai.
yesterday   prayer.house   A3-burn
'Yesterday, there was a fire in the prayer house.

Pavẽ   chondaro   kuery   ha'e   amongue   jurua   kuery   i-kuai   jave
All   chondaro   PL   and   some   jurua   PL   B3-be.pl during
joupive.
together
'All the chondaros and some juruas were gathered there.'

Jurua   o-ẽ-mba   je   o-ña   reve.
jurua   A3-leave-COMPL   HSY   A3-run   COMMIT
'The juruas all left running.'

Chondaro   je   o-pyta-pa   o-mbo-gue   aguã   tata.
chondaro   HSY   A3-stay-COMPL   A3-CAUS-die.out   PURP   fire
'The chondaros all stayed to put down the fire.'

(22) Kuee   opy   okai.
yesterday   prayer.house   A3-burn
'Yesterday, there was a fire in the prayer house.

Pavẽ   ava-kue   ha'e   amongue   kuña-gue   i-kuai   jave   joupive.
All   man-PL   and   some   woman-PL   B3-be.pl during   together
'All the men and some women were gathered there.'

Ava*(-kue)   o-ẽ-mba   je   o-ña   reve.
man-PL   A3-leave-COMPL   HSY   A3-run   COMMIT
'The men all left running.'

Kuña*(-gue)   je   o-pyta-pa   o-mbo-gue   aguã   tata.
woman-PL   HSY   A3-stay-COMPL   A3-CAUS-die.out   PURP   fire
'The women all stayed to put down the fire.'

3 Articulating the puzzle

- The role of *-kue ~ -gue* suffixation in the number system of Mbya raises a number of questions.

  1. Why is plural marking obligatory with only a subset of nouns?

  2. Why isn't plural marking required with numerals and quantifiers?

  3. Why can the requirement to mark plurality with these nouns be satisfied either by plural suffixation or by the plural enclitic *kuery*?

3.1 Why is plural marking obligatory with only a subset of nouns?

- If nominal roots are number neutral, plural suffixation ought to be redundant and therefore lacks functional motivation.

- This suggests that there is a split in the number system of mbya and that not all nominal roots or stems are number neutral.

- The question becomes: what motivates the split? It's tempting to invoke the animacy hierarchy:

  Constraint of the Animacy Hierarchy on the singular–plural distinction:

  The singular–plural distinction in a given language must affect a top segment of the Animacy Hierarchy.

  — Corbett (2000)

(23) The animacy hierarchy (Corbett 2000):
     speaker > addressee > 3rd person > kin > human > animate > inanimate

- The problem with this analysis is that the Mbya number system does not appear to split along the animacy hierarchy:

  ‣ Kin terms don't bear plural suffixes: *nhanderu kuery* ('our fathers'), *nhandexy kuery* ('our mothers'), *xejaryi kuery* ('my grandmothers'), *xeramoĩ kuery* ('my grandfathers'), *xeryke'y kuery* ('my older brothers', male ego), *xekyvy kuery* ('my younger brother', female ego), …

  ‣ Many human nouns don't bear plural suffixes: *xeirũ kuery* ('my friends'), *mburuvixa kuery* ('leaders'), *karai kuery* ('spiritual leaders'), *opygua kuery* ('spiritual leaders'), *xondaro kuery* ('xondaros'), *jurua kuery* ('juruas'), …

3.2 Why isn't plural marking required with numerals and quantifiers?

- If *-kue ~ -gue* were number agreement, one would expect, everything else being equal, that it would show up with numerals and at least some quantifiers.

- There are of course languages in which numerals have been argued to combine with singular nouns (cf. Ionin and Matushansky 2006, 2018).

- But the wholesale *optionality* of plural marking with numerals and quantifiers is striking and casts doubt on an inflectional analysis.

3.3 Why can the requirement to mark plurality with these nouns be satisfied either by plural suffixation or by the plural enclitic *kuery*?

- This is another argument against an inflectional analysis of *-kue ~ -gue* suffixation: if the suffix was an exponent of number agreement, we wouldn't expect it to alternate with a number marker that:

  ‣ is optionally attested with nouns that are clearly number neutral,

  ‣ carries with it inferences that cannot be reduced to simple plural number features (cf. associativity and social cohesion).

- More generally, this suggests that the requirement to mark certain nouns for number is semantic rather than morphosyntactic:

  ‣ Nouns like *ava* or *kuña* are semantically singular (denote atoms).

  ‣ Plural marking is required when semantic composition requires access to pluralities.

  ‣ There is no morphosyntactic constraint on the choice of plural marker used to satisfy this requirement.

3.4 Looking ahead

- In the next sections we will explore an analysis that:

  ‣ recognizes a split between number neutral nouns (like *jurua*) and singular nouns (like *ava*) in the language,

  ‣ locates the origin of this split in the grammar of property concepts, rather than in the animacy hierarchy,

  ‣ treats *-kue ~ -gue* as a derivational rather than inflectional suffix.

4 *-kue ~ -gue* as a derivational suffix

4.1 Background on Guarani POS:

- The question whether Guarani languages exhibit a Noun/Verb distinction is debated, and need not concern us here (cf. Queixalós 2006).

- Relevant facts for this talk:

  ‣ There are two flectional classes of contentives: inactive roots and active roots.

  ‣ Inactive roots tend to be felicitous as arguments without derivation.

  ‣ Active roots tends to be infelicitous as arguments without derivation.

  ‣ Inactive marking is also used on inactive stems used as arguments, where it indicates possession.

  ‣ Let's use the label 'noun' to refer to stems that are used as arguments; this is a syntactic category.

- Although it's been argued that Guarani languages lack adjectives, there is an important class of inactive roots that can be used in adjectival functions:

  ‣ These roots can be used as modifiers of arguments without cross-referencing or relativization.

  ‣ This is not true of other inactive roots, which are cross-referenced and relativized when used as modifiers.

  ‣ Inactive roots that can serve as bare modifiers tend to denote properties rather than objects.

  ‣ Let's use the label 'adjective' to refer to stems that are used as modifiers of arguments; this is also a syntactic category.

(24) a. Ha'e   rami   gua   rupi   ma   avaxi   ma   tembi'u   **porã**.
          3   SIM   NMLZ   because   BDY   corn   BDY   food   good
          'That's why [I tell you] this, corn is good food.' (Grupioni 2007)

      b. Ha'e   gui   je   o-exa   caixa   **i-tui**   **va'e**.
          3   SRC   HSY   A3-see   box   B3-lie   REL
          'And so he saw a box that was lying there.' (GUN001R007)

4.2 *-kue ~ -gue* and the grammar of Property Concepts

- Inactive roots that accept *-kue ~ -gue* suffixation in nominal position are a subset of inactive roots that can be used as adjectives.

- All of them can be used as bare modifiers of nouns:

(25) Rovo   kunha-'i   je   ha'e   ae-'i   yy   py
otter   female-DIM   HSY   3   alone-DIM   water   in
o-nheovanga   o-iko-vy.
A3-play   A3-be-CONV
'Once there was a female otter playing alone in the water.' (Veríssimo 2002)

(26) Setembro   gui   ma   ara   pyau   i-jypy   (…)
September   SRC   BDY   time   new   B3-begin   (…)
'The new time [spring] starts in September (…)' (Grupioni 2007)

- This generalization extends to the use of the plural suffix *-kue ~ -gue*, which is also attested on adjectival stems, where it pluralizes the whole phrase:

(27) yvoty   porã-gue
flower   beautiful-PL
'beautiful flowers' (Dooley 2016)

yvyty   yvate-kue
mountain   tall-PL
'tall mountains' (Dooley 2016)

- We propose that these roots all share a common semantic core: they encode Property Concepts.

- We derive the lack of number neutrality of these roots from this fact.

4.3 Implementation: Property Concepts and Number in Mbya

4.3.1 Property Concepts and quality denoting roots

- Koontz-Garboden and Francez (2017) argue that there are two types of Property Concept lexemes across languages, each with their own strategies of predication:

  ‣ Individual denoting PC lexemes support non-possessive predication strategies.

  ‣ Quality denoting PC lexemes support possessive predication strategies.

- It is well known that, in Tupi-Guarani languages, the same set of markers are used both to cross-reference the subject of inactive predicates and the possessors of nouns:

(28) Chee   ma   che-kane'õ.
1.SG   BDY   B1.SG-tired
'I am tired.'

(29) Kuaray   ma   che-r-a'y.
Kuaray   BDY   B1.SG-LNK-son
'Kuary is my son.'

- Inactive cross-reference markers are also used in possessive predication:[2]

(30) Chee   ma   che-r-a'y.
1.SG   BDY   B1.SG-LNK-son
'I have a son.'

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[2]Which is not the same as identificational predication with a possessive noun, cf. 'I have a son' vs. 'He is my son.'

- Koontz-Garboden and Francez (2017) propose that PC lexemes that participate in possessive predication denote qualities rather than sets of individuals:

  ‣ Qualities are modelled as portions of substances (cf. 'Ryan's happiness.').

  ‣ Possessive predication is modelled as ascribing a quality to an individual.

  ‣ Non-possessive predication is modelled as membership in a set, and is therefore unavailable with quality denoting PC lexemes.

4.3.2 Property Concepts and singular denotations

- We propose that Mbya Property Concept inactive roots are quality denoting and therefore that inactive predication with PC roots is possessive predication.

- This analysis entails that PC roots cannot be used without adjustments in contexts where the speaker wants to refer to individuals (characterized by the property):

  ‣ By default, *ava* and *kuña* denote instances of the properties of being male and being female, rather than male and female individuals.

- By contrast, we expect PC roots to be attested in argument position without adjustments when the speaker wants to refer to instances of the property itself:

(31) Kane'õ   gui   ma   ha'a.
     fatigue   from   BDY   A1.SG-fall
     'I collapsed from fatigue.' (Dooley 2016)

- An apparent issue for this analysis is the fact that nouns like *ava* and *kuña* are indeed used to denote sets of individuals:

(32) Pavẽ   ava   i-kuai   kokue   py.
     all   man   B3-be.PL   field   in
     'All the men are in the field.'

- In such contexts, we argue that a covert type-shifter QTI maps quality denoting roots to sets of individuals who possess an instance of the quality, with the following caveats:

  1. QTI outputs sets of atomic individuals, without pluralities.

  2. In argument position, QTI is restricted to a subset of PC roots that denote age and gender properties that can be ascribed to human beings.

- QTI is also assumed to take place in adjectival uses of PC roots, where the modifier must be intersected with the noun and therefore be interpreted as individual denoting (cf. Koontz-Garboden and Francez 2017):

(33) uru   ava
     chicken   male
     'rooster'

- Crucially, the restriction of the type-shifter's range to human individuals is only associated with nominal uses. This may be an animacy hierarchy effect.

- From this, analysis, it follows straightforwardly that nominal PC stems cannot independently refer to pluralities.

- We still need to explain why they can combine with quantifiers and plural numerals without pluralization.

- For quantifiers, the answer is simple: quantifier denotations do not generally require pluralities in their domain:

(34) pavẽ ava
all man
'all men'

(35) $[\![pavẽ]\!]^{c,g} = \lambda P.\lambda Q.\ P \subseteq Q$

- For numerals, the answer is more complex:

  ‣ Some authors have argued that in some languages, numerals combine with semantically singular nouns (see esp. Ionin and Matushansky 2006, 2018).

  ‣ Others have pushed back against this idea (see Bale et al. 2011)

  ‣ Yet others have proposed compositional analyses of numeral phrases that are incidentally compatible with singular denotations (see e.g., Bylinina and Nouwen 2018).

  ‣ While we are not fully committed to a specific analysis of numerals, we are committed to the claim that nominal PC roots denote sets of atoms in numeral noun phrases.

  ‣ Bylinina and Nouwen (2018) provide an analysis of numerals as degree terms that is consistent with our facts and that is less radical than Ionin and Matushansky (2006, 2018):[3]

(36) a. [[mboapy MANY] ava]
b. $[\![mboapy]\!]^{c,g} = 3$
c. $[\![MANY]\!]^{c,g} = \lambda n.\lambda P.\lambda Q.\exists x[\#(x) = n \wedge PL(P) \wedge PL(Q)]$
d. $[\![[[mboapy\ MANY]\ ava]]\!]^{c,g} = \lambda Q.\exists x[\#(x) = 3 \wedge PL(man) \wedge PL(Q)]$

4.3.3 The derivational morpheme *-kue ~ -gue*

- Our proposal is that *-kue ~ -gue* spells out the combination of plural features with a derivational head that triggers the QTI shift.

- Its distribution is constrained by restriction on the QTI head itself:

  ‣ In nominal stems, it is only attested with age and gender related PC inactive stems denoting human individuals (e.g., *ava-kue* 'men')

  ‣ On adjectival stems, it is attested with the broader set of PC inactive stems (e.g., *yvoty porã-gue* 'beautiful flowers')

  ‣ We can interpret this asymmetry as a form of markedness: type-shifting PC roots to individual denotations is more marked with nouns than with adjectives.

  ‣ This in turn might follow from the fact that the QTI shift of adjectival uses of PC roots is motivated by a universal constraint on adjective denotation:

    – The denotation of a modified noun phrase must be a subset of the denotation of the noun (Koontz-Garboden and Francez 2017)[4]

    – By contrast, QTI is relatively unmotivated with nouns.

- Cumulative denotations that include both atomic individuals and pluralities follow from common assumptions on pluralization in natural languages as closure of a set under sum formation.

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[3]Note that for Bylinina and Nouwen (2018), pluralization returns sets structured as full lattices with a bottom element, rather than semi-lattices. This is orthogonal to the argument developed here.

[4]This is a simplification. Koontz-Garboden & Francez's generalization does not strictly require this.

- On this analysis, strong readings of the plural (excluding atomic individuals) are derived by implicature (see Spector 2007; for an application to Kaiowa *kuera*, see Guerra Vicente and Ramires 2020).

5 The (as)sociative plural *kuery*

- We have established that *kuery* is optionally attested with number neutral nouns to mark plurality, in addition to its pronominal and associative uses.

- We have also argued that *kuery* communicates that the entities in the extension of the noun (phrase) it marks form a socially cohesive group.

- We have also observed that *kuery* does not trigger semantic group formation (see Landman 1989) insofar as nouns marked by *kuery* can still participate in distributive predications.

- We propose that non-pronominal, non-associative uses of *kuery* denote a regular pluralization operation enriched by a presupposition that imposes a social structure to the extension of its argument:

(37) $[\![\text{kuery}_{\langle et,et \rangle}]\!]^{c,g} = \lambda P.\lambda x.\ \text{PL}(P)(x) \wedge \partial(\exists \mathscr{G}[\mathscr{G} = \langle\!\langle \text{PL}(P), \mathscr{S} \rangle\!\rangle])$
    where $\mathscr{S}$ is a contextually salient social relation on a set

- This derives our observations:

  ‣ Provided social relations (whatever they are) are undefined on sets of inanimates, *kuery* will be undefined with inanimate nouns, with caveats:
    – we expect variation with respect to this restriction; in particular, certain dialects may admit non-social connectedness relation (see Thomas 2020 on Paraguayan Mbya)
    – even in dialects that favour a social reading of *kuery*, the requirement may be satisfied by a socially imposed order on inanimate entities (e.g. *yvy regua kuery* 'crops')

  ‣ The requirement that a salient social relation be defined on the noun's extension matches the tendencies observed in the corpus regarding the semantic classes of nouns with which *kuery* is attested: kinship nouns, ethnonyms, nouns of individuals by social status or function, nouns of individuals by generation, nouns individuals by alliance (cf. *irũ kuery* 'friends'), animals with marked social behaviour (cf. *eiru kuery* 'bees').[5]

  ‣ *Kuery* may pluralize a PC noun, provided a salient social relation is defined on its extension.

- Associative uses of *kuery* will have a different type but will trigger the same presupposition:

(38) $[\![\text{kuery}_{\langle e,e \rangle}]\!]^{c,g} = \lambda x.\sigma(\{X: \exists \mathscr{G}[x \sqsubset X \wedge \mathscr{G} = \langle\!\langle X, \mathscr{S} \rangle\!\rangle]\})$
    where $\mathscr{S}$ is a contextually salient social relation on a set

- As with *-kue ~ -gue*, cumulative denotation is derived by implicature: see Guerra Vicente and Ramires (2020) for a similar analysis of *kuera* in Kaiowa.

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[5]To be taken with a grain of salt: pending statistical analysis, it's possible these tendencies are due to over-representation of these noun classes among plural nouns in the corpus.

6 Conclusion

- Is Mbya number neutral? Yes, insofar as all non-PC roots are.

- Why do nouns like *ava* and *kuña* behave like singular nouns? Because they are, but that is a side effect of type-shifting quality denoting PC roots to sets of individuals.

- What is the nature of the split between singular nouns like *ava* and *kuña* and number neutral nouns?

  ‣ The split is primarily rooted in the contrast between object denoting and quality denoting inactive roots.

  ‣ Nouns that are not number-neutral are derived from quality denoting roots by a type-shifting operation.

  ‣ Arguably, there is still an indirect role for the animacy hierarchy in this story: QTI type-shifting of nouns is restricted to a subset of quality denoting roots that include gender and age related properties, and the range of type-shifting function is itself restricted to the human codomain.

- What is *-kue~-gue*? It's the exponent of type-shifting head bundled with plural features.

- Why is *-kue~-gue* optional with numerals and quantifiers? Because these operators can combine with semantically singular nouns.

- Why can be *-kue~-gue* substituted by *kuery*? Because *kuery* provides the same semantic plurality, together with social cohesiveness features that are easily satisfied by human nouns.

Glossing abbreviations

A: active; B: inactive; BDY: information structure boundary marker; CAUS: causative; COMMIT: commitative; COMPL: completive; CONT: contrastive; CONV: converb; CORR: corrective; DEM: demonstrative; DIM: diminutive; DS: different subjectl HSY: hearsay evidential; INC: inclusive; INT: intensifier; LOC: local case; MIR: mirative; NEG: negative; NMLZ: nominalization; PL: plural; PURP: purposive; LNK: linker morpheme; RECIP: reciprocal; REFL: reflexive; REL: relativizer; SIM: similative; SG: singular; SRC: source; SS: same subject;

References

Bale, Alan, Michaël Gagnon and Hrayr Khanjian. 2011. Cross-linguistic representations of numerals and number marking. Proceedings of SALT 20: 582–598.

Bylinina, Lisa and Rick Nouwen. 2018. On "zero" and semantic plurality. Glossa: a journal of general linguistics 3(1): 98, 1–23.

Corbett, Greville. 2000. Number. Cambridge University Press.

Dooley, Robert. 2011. Mbyá Guaraní Collection of Robert Dooley. The Archive of the Indigenous Languages of Latin America (AILLA). PID 1351.

Dooley, Robert. 2015. Léxico Guarani, Dialeto Mbya, Introdução. Summer Institute of Linguistics.

Dooley, Robert. 2016. Léxico Guarani, Dialeto Mbya. Summer Institute of Linguistics.

Duarte, Dionisio. 2013. Vera Guachu Ayvu Añetêngua.

Estigarribia, Bruno. 2020. A Grammar of Paraguayan Guarani. UCL Press.

Grupioni, Luís Donisete Benzi. 2007. Nhande reko tenonde'u tenondera. Secretaria Municipal de Educação de São Paulo.

Guerra Vicente, Helena and Daiane Ramires. 2020. Plurals in Kaiowá and the Case for Obligatory Implicatures. Cadernos de Estudos Linguísticos, Campinas, v. 62, p. 1-25

Ionin, Tania and Ora Matushansky. 2006. The composition of complex cardinals. Journal of Semantics 23 (4): 315–360.

Ionin, Tania and Ora Matushansky. 2018. Cardinals. MIT Press.

Koontz-Garboden, Andrew and Itamar Francez. 2017. Semantics and morphosyntactic variation. Oxford University Press.

Landman, Fred. 1989. Groups I. Linguistics and Philosophy 12: 559-605.

Queixalós, Francesc. 2006. The Primacy and Fate of Predicativity in Tupi-Guarani. In X. Lois and V. Vapnarsky (eds.), Lexical categories and Root Classes in Ameridian Languages. Bern: Peter Lang International Academic Publishers: 249-288.

Spector, Benjamin. 2007. Aspects of the Pragmatics of Plural Morphology: On Higher-order Implicatures. In U. Sauerland and P. Stateva (eds.), Presupposition and Implicature in Compositional Semantics. Palgrave Macmillan: 243–281.

Thomas, Guillaume. 2020. Countability in Mbya. Linguistic Variation 20 (2): 288–299.

Veríssimo, Arlindo Tupã. 2002. Opa mba'e re nhanhembo'e aguã. Editora Nhombo'ea Guarani.