

When number doesn't *Agree*: Evidence from Yucatec Maya[©]

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1 Non-inflectional plural marking

Number is inflectional and obligatory (for countable nouns) in many languages. Nominal and verbal elements often obligatorily agree in number.

- (1)
- | | | | | |
|----|------|--------------------|-----------------|----------|
| a. | Dos | muchacha- s | est- án | cantando |
| | two | girl- PL | be-3. PL | singing |
| b. | *Dos | muchacha | est- á | cantando |
| | two | girl | be-3. SG | singing |
| c. | *Dos | muchacha | est- án | cantando |
| | two | girl | be-3. PL | singing |
| d. | *Dos | muchacha- s | est- á | cantando |
| | two | girl- PL | be-3. SG | singing |
- 'Two girls are singing.'

In a number of other languages, like Yucatec Maya, plural marking is not obligatory for plural interpretation. In Yucatec Maya (YM), the plural morpheme *-o'ob* is ambiguous between: denoting a plural noun, cross-referencing a plural third person argument on the verb and marking a third person plural possessor:

- (2) u p'éek-**o'ob**
 A.3 dog-**PL**
 'their dog' / 'his dogs' / 'their dogs' (Lucy 1992: 47)
- (3) T-u bis-ah-**o'ob**
 PFV-A.3 take-CMP-**PL**
 'He took them.' / 'They took it.' / 'They took them.' (Lucy 1992: 53)

Table 1: Yucatec Maya Set A and Set B pronominal cross-reference markers

Person	Set A singular	plural	Set B singular	plural
1 st	in(w)	k ... -o'on	-en	-o'on
2 nd	a(w)	a(w) ... -e'ex	-ech	-e'ex
3 rd	u(y)	u(y) ... -o'ob	-Ø/-ij	-o'ob

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InYM, plural marking is not necessary for plural interpretation. When the plural morpheme *-o'ob* is present, the noun must denote a plurality:

- | | | | | | |
|-----|-----|--------------------------|-----|-----|-------------------------------|
| (4) | le | x-ch'úupal-o' | (5) | le | x-ch'úupal- o'ob -o' |
| | DEF | FEM-girl-D2 | | DEF | FEM-girl- PL -D2 |
| | | 'the girl' / 'the girls' | | | 'the girls' / NOT: 'the girl' |

Plural can co-occur with a numeral and classifier:

- | | | | | | | |
|-----|------------|--------------------|-----|-----|--|-------------------------|
| (6) | ka'a-túul | peek'- o'ob | (7) | le | óox-p'éel | siidra- o'ob -o' |
| | two-CL.AN | dog- PL | | DEF | three-CL.IN | cider- PL -D2 |
| | 'two dogs' | | | | 'the three ciders' (Andrade & Máas Collí 1999:216) | |
-
- | | | | | | |
|-----|---|-------------------|--|--|--|
| (8) | óox-p'éel | jab'- o'ob | | | |
| | three-CL.IN | year- PL | | | |
| | 'three years' (Blair & Vermont-Salas 1965-7: 454) | | | | |

There is no obligatory agreement for number:

- | | | | | | |
|----------|-----|----|-----|------------------------|-------------------------|
| Nominal: | (9) | a. | le | ki'ichpam | x-ch'úupal- o'ob |
| | | | DEF | pretty | FEM-girl- PL |
| | | b. | *le | ki'ichpam- o'ob | x-ch'úupal- o'ob |
| | | | DEF | pretty- PL | FEM-girl- PL |
| | | | | 'the pretty girls' | |
-
- | | | | | | | | |
|----------|------|----|--------------------------|-----|--------------------|-----|-----------------------------|
| Clausal: | (10) | a. | Táan | u | k'aay | le | x-ch'úupal-o' |
| | | | PROG | A.3 | sing | DEF | FEM-girl-D2 |
| | | b. | Táan | u | k'aay | le | x-ch'úupal- o'ob -o' |
| | | | PROG | A.3 | sing | DEF | FEM-girl- PL -D2 |
| | | c. | Táan | u | k'aay- o'ob | le | x-ch'úupal- o'ob -o' |
| | | | PROG | A.3 | sing- PL | DEF | FEM-girl- PL -D2 |
| | | d. | ?Táan | u | k'aay- o'ob | le | x-ch'úupal-o' |
| | | | PROG | A.3 | sing- PL | DEF | FEM-girl-D2 |
| | | | 'The girls are singing.' | | | | |

Properties of plural marking in YM:

- Not necessary for plural interpretation
- Co-occurrence with numeral classifier
- No obligatory agreement

2 Why are non-inflectional plurals interesting?

2.1 Nominal denotation

What is the denotation of nouns in non-obligatory (non-inflectional) plural languages?

- In inflectional plural languages, like English, plural marking is obligatory for countable nouns,

- indicating an inherent (semantic) difference between count and mass nouns
- Do nouns in non-inflectional plural languages lack this count-mass distinction?
- Or, can the difference be reduced to syntactic variation?

2.2 Number agreement

Do all plurals instantiate a Number category, and if not, what are the consequences?

- Since the DP hypothesis (Brame 1982, Szabolcsi 1983, Abney 1987) plural morphology has been assumed to head a Number Phrase (#P) in English and other languages (Ritter 1991, 1995, Bernstein 1991, Valois 1991)
- If non-inflectional plural marking does not instantiate the functional head Number (#), it there is no unvalued feature [u#] and hence no *Agree* (Chomsky 2000, 2001) operation for number (Wiltschko 2008)

2.3 Co-occurrence of plurals and classifiers

What is the function of the non-inflectional plural? Does it serve to individuate nominal referents, like inflectional plurals and classifiers, or does it have a different function?

- Plurals and classifiers predicted not to co-occur (Sanches & Slobin 1973)
 - Greenberg (1963): Numeral classifiers imply the absence of compulsory plurals
 - Chierchia (1998): “Plural marking, of the kind familiar from many western languages, will be absent, since with every noun being mass, the function PL will have no argument for which it is defined.” (Chierchia 1998: 353)
 - Borer (2005): Classifiers and plurals share the function of individuation and instantiate the same syntactic category and thus should be in complementary distribution

2.3.1 Chierchia's (1998) Nominal Mapping Parameter

The semantic features [\pm arg(ument)], [\pm pred(icate)] constrain the way in which syntactic category N is mapped onto its interpretation, as a kind, a property or both.

A [+arg], [-pred] language (like Chinese and Japanese) bare nouns are mapped onto **kinds** (functions from worlds to pluralities).

- Allow bare nouns to be arguments
- Lack plural morphology since kinds are neutralizations of the singular/plural distinction
- Generalized classifier system to individuate kind nouns

A [-arg] [+pred] language (like French and Italian) maps bare nouns onto **properties**

- Does not allow bare nominal arguments (must combine with a determiner)

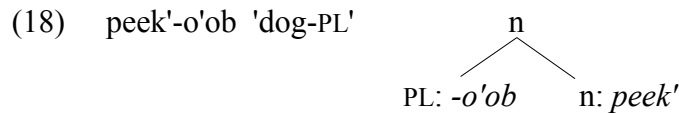
A [+arg] [+pred] language (like English and Russian) maps bare nouns onto kinds in some cases and properties in other cases

2.3.2 Is Yucatec a [+arg, -pred] language?

1. Allows bare nouns to be arguments: No. Definite arguments require the definite determiner. Bare arguments are interpreted as general or kind-referring.

(11) K-u-kín-s-ik wínik j-chakmo'ol
 IMPF-A.3-kill-CAUS-CMP man MSC-jaguar
 'Jaguars kill men.' (Durbin & Ojeda 1978)

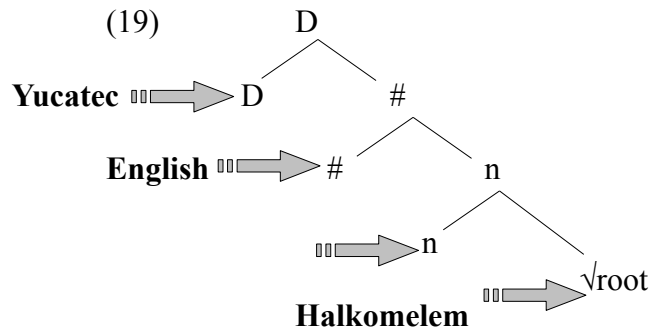
In Yucatec, the plural is merged as an adjunct:



3.2 Where plural is merged

Wiltschko (2008) proposes that plurals can be merged at different places within the DP. Halkomelem plurals are merged at the $\sqrt{\text{root}}$, but the plural in Japanese may be a candidate for merge at DP.

In Yucatec, plural seems to be merged at the level of the DP



4 Evidence for DP-adjunction of plural in Yucatec Maya

4.1 Yucatec Maya plural as a syntactic adjunct

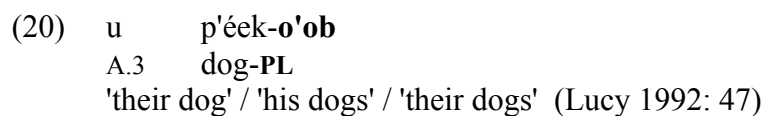
- Optionality
- No obligatory agreement
- No irregular forms
- No allomorphs

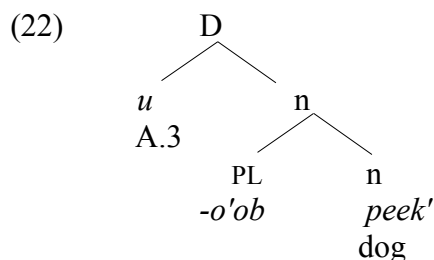
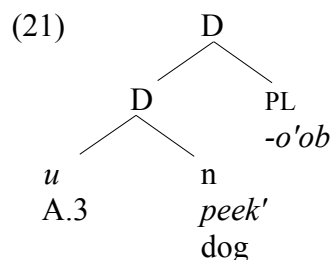
4.2 Yucatec Maya plural does not merge at

- Plural and numeral classifier co-occur (assuming following Borer (2005) that #P is the relevant domain for both)
- No obligatory number agreement (not a functional head)
- Plural cannot occur on a pre-nominal adjective, but can occur post-nominally (see Section 4.4.1)

4.3 Yucatec Maya plural does not merge at the n/v/a level

- When the plural morpheme *-o'ob* merges with a verbal or adjectival constituent, it does not pluralize the event or intensify the property
- Plural scopes over multiple constituents in the nominal phrase (see (2) repeated here as (19))





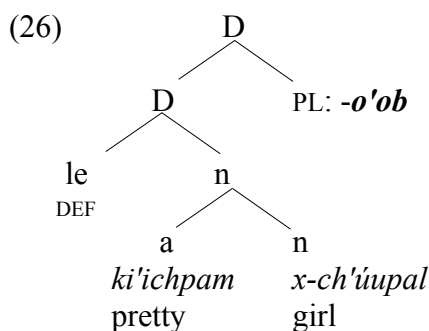
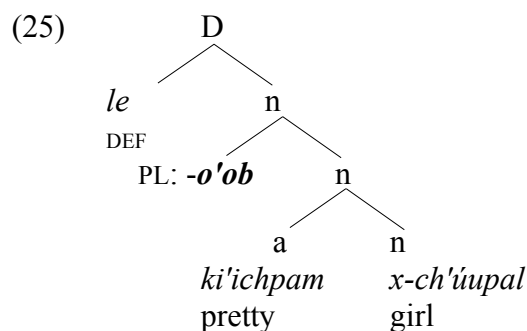
Unlike Halkomelem, the plural in Yucatec does not adjoin to the root. It does not occur between compounds or inside derivational morphology

- (23) a. le pol-ch'oom-**o'ob**-o'
 DEF head-parrot-PL-D2
 b. *le pol-**o'ob**-ch'oom-o'
 DEF head-PL-parrot-D2

4.4 Evidence for DP-adjunction

4.4.1 Plural cannot attach to prenominal adjectives

- (24) a. le ki'ichpam x-ch'úupal-**o'ob**-o'
 DEF pretty FEM-girl-PL-D2
 'the pretty girls'
 b. *le ki'ichpam-**o'ob** x-ch'úupal-o'
 c. *le ki'ichpam-**o'ob** x-ch'úupal-**o'ob**-o'



4.4.2 No contraction of third person plural plurals

Table 2: Emphatic pronouns (from Bohnemeyer 2002: 90)

First person singular	teen >	ti'	+	en
		LOC	+	B.1.SG
First person plural	to'on >	ti'	+	o'on
		LOC	+	B.1.PL
Second person plural	te'ex >	ti'	+	e'ex
		LOC	+	B.2.PL
Third person plural	*to'ob >	ti'	+	o'ob
		LOC	+	B.3.PL
	leti'o'ob,	le	+	ti' + o'ob
		DEF	+	LOC + PL

4.4.3 “Double” plurals

Plural possessor and possessee both marked

- (27) Kux túun a suku'un-e'ex-**o'ob**?
what.about then A.2 elder.brother-B.2.PL-PL
'What about your (pl) elder brothers?' (Blair & Vermont-Salas 1965-7: 85)

The plural morpheme -o'ob cannot also occupy # (assuming that the second person plural occupies #P because it triggers obligatory second person plural agreement)

- (28) te'ex-e' táan a k'aay*(-e'ex)
PRN.2.PL-TOP PROG A.2 sing-B.2.PL
'As for you, you are singing.'

In borrowings from Spanish:

- (29) ba'ax j tal u bet le éespanyool-**es-o'ob-o'**
what PAST come A.3 do DEF Spanish-PL(Sp)-PL-D2
'what the Spaniards came to accomplish' (Lehman 1989: 111)
- (30) bey t-u beet-aj-o'ob tuláakal tu'ux le éespanyol-**o'ob-o'**
thus PST-A.3 do-CMP-PL all where DEF Spanish-PL-D2
'that Spaniards did so everywhere' (Lehman 1989: 90)

4.5 If plural is adjoined to DP, we would predict:

4.5.1 *The presence of the plural should license argumenthood*

(assuming the presence of DP is necessary for argumenthood (Longobardi 1994))

Yes, Yucatec allows bare plurals

- (31) Ko'lel-**o'ob-e'** ma' táan u bin-i'
woman-PL-TOP NEG PROG A.3 go-D4
'Women don't go there.' (Verhoeven 2007:105)
- (32) Juan-e' k-u-meent-ik chak k'áan-**o'ob**
Juan-TOP IMPF-A.3-make-INC red hammock-PL
'As for Juan, he makes red hammocks.' (Tonhauser 2009: 4)

4.5.2 *The presence of the plural marker should trigger definiteness/specificity effects*

Yes. definiteness and specificity effects are observed:

- When a person comes to school with a new pair of shoes, someone will ask him/her:

- (33) Tumben le xanab-o'
new DEF shoe-D2
'Are those shoes new?'

- If a person goes to a shoe store and sees a pair of shoes that look old on a rack with a bunch of other shoes, they ask:

(34) Tumben-**o'ob** le xanab-o'
 new-PL DEF shoe-D2
 'Are those shoes new?'

- Obligatory wide scope in specific reading of indefinite objects

(35) Juan-e' t-uy=il-ah hun-túul koh-**o'ob** beyxan Pedro
 Juan-TOP PRV-A.3=see-CMP one-CL.AN puma-PL also Pedro

t-uy=il-ah-**o'ob**
 PRV-A.3=see-CMP-PL
 'Juan saw pumas and Pedro saw them too.
 NOT: Juan saw pumas and Pedro saw some too.'

(36) Juan-e' t-uy=il-ah hun-túul koh-**o'ob** beyxan Pedro
 Juan-TOP PRV-A.3=see-CMP one-CL.AN puma-PL also Pedro

t-uy=il-ah-__
 PRV-A.3=see-CMP-__
 'Juan saw pumas and Pedro saw them too.
 Juan saw pumas and Pedro saw some too.' (Norcliffe 2009: 90)

Similar effects have been found with plural marking in Persian (Ghameshi 2003)

4.6 Revisiting the plural typology

- Yucatec Maya is an example of a language in which the plural morpheme is merged as an adjoined modifier at the level of D (in accordance with Wiltschko's (2008) syntactic typology)

Table 3: Syntax of plural marking

Language	Merged how	Merged where
English	head	#
Halkomelem	adjunct	√root
Yucatec Maya	adjunct	D

- Other logical possibilities in the typology
 - If plural is a functional head, can it be merged anywhere other than Number?
 - Is there anywhere a plural adjunct cannot merge? #?
 - Korean plural as QP adjunct

(37) Swuhak-kwa kyoswu-ka kyosil-ey moyessta
 math-department professor-NOM classroom-LOC gather
 'Professors of a math department gathered in the plaza.'

(38) Swuhak-kwa kyoswu-**tul-i** kyosil-ey moyessta
 math-department professor-tul-NOM classroom-LOC gather
 '(All) the professors of a math department gathered in the plaza.'

(39) Swuhak-kwa-nun kyoswu-ka ney myeng-ita
 math-department-TOP professor-NOM four CL-CPL.DC
 'The professors of a math department are a group of four.'

(40) ?? Swuhak-kwa-nun kyoswu-**tul-i** ney myeng-ita
 math-department-TOP professor-tul-NOM four CL-CPL.DC
 'The professors of a math department are a group of four.' (Park 2008, data from Kwak 2003)

5 Conclusion

- Yucatec Maya is a language in which the non-inflectional plural is a syntactic modifier that does not head a functional projection. It merges as an adjunct to D.
- If inflectional and non-inflectional plurals do not instantiate the same syntactic category, then we can maintain Chierchia and Borer's generalizations about the co-occurrence of classifiers and plurals (those that head a functional Number projection).
- More evidence in a line of research showing that the differences in nominal denotation among languages is reducible to syntactic, rather than purely semantic, variation (Cheng & Sybesma 1999, Déprez 2004, Gebhardt 2009, Ghomeshi 2003, Kwon & Zribi-Hertz 2004, Sato 2008, Wiltschko 2008, inter alia).

Abbreviations used

1	1 st person	FEM	Feminine
2	2 nd person	IMPF	Imperfective
3	3 rd person	INC	Incompletive
A	Set A cross reference marker	LOC	Locative
APPL	Applicative	MSC	Masculine
B	Set B cross-reference marker	NOM	Nominative case
CAUS	Causative	PL	Plural
CL	Classifier	PRN	Pronoun
CL.AN	Animate classifier	PROG	Progressive
CL.IN	Inanimate classifier	PRV	Perfective
CMP	Completive	Sp	Spanish borrowing
D2	Deictic particle (distal)	TOP	Topic
DEF	Definite determiner		

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