1 Introduction

The Sanches-Greenberg-Slobin Generalization (Greenberg 1977, Doetjes 2007) “If a language includes ... numeral classifiers, then it will also have facultative expression of the plural. In other words it will not have obligatory marking of the plural on nouns.”

English: Obligatory plural language

three dog-s

Thai: Numeral classifier language

thúrian sàam lúak

durian three cl:fruit

‘three durian’

Dafing (Mande: Burkina Faso): Plurals and classifiers

wúrú=rú
dog=PL

‘dogs’

wúrú dèn flá
dog cl:hum two

‘two dogs’

* wúrú-rú flá
dog-pl two

Borer (2005) and Nomoto (2013) argue that classifiers and plural markers occupy the same syntactic position to mark number: Num/Clf/Div.

This proposal is supported by the complementarity of plurals and classifiers in Dafing (4-c) and W. Armenian (Borer 2005).

(6) Goals of this paper

a. To show that Dafing provides evidence for Borer’s analysis of classifiers as Num heads.

b. To show that this analysis permits an explanation of the Sanches-Greenberg-Slobin Generalization:

(7) Numeral classifier conjecture: Numeral classifiers only occur in the absence of N^0-to-Num^0 movement

a. “Number-marking language”

b. “Numeral classifier language”

(8) a. Consequence 1: Num can be pronounced as a numeral classifier

b. Consequence 2: Nouns remaining in N can have general number (Corbett 2000), i.e., are number neutral, (cf. Greenberg 1977, Chierchia 1998).

c. Consequence 3: Plural marking is not a nominal affix, it will have a marked plural interpretation.

This idea is only novel in its specific formulation. For closely related proposals, compare Doetjes (1997), Cheng and Sybesma (1999), Borer (2005) and Nomoto (2013).
2 Dafing as a numeral classifier language

(9) a. Mande languages are mostly head-final except for a head-initial TP.
   b. Numeral classifiers have not been previously documented in any Mande
      languages, so we should proceed with caution.

(10) Noun phrase order: N-Adj-Clf-Num-Dem
   a. mɛ̀tə́ri zánzàn ’miːi
      teacher tall this
      ‘this tall teacher’
   b. mɛ̀tə́ri zánzàn mɔ́ ’sábá
      teacher tall clf three
      ‘three tall teachers’

2.1 Numeral classifiers in Dafing

(11) Dafing has two sortal numeral classifiers (‘count classifiers’)
   a. dèn non-humans optional derived from dèn ‘child’
   b. mɔ́ humans obligatory derived from mɔ́ ‘person’

(12) Diagnostics for count classifiers (vs. noun classifiers cf. Aikhenvald 2000)
   a. Occur with numerals
   b. Are distinct from nominalizing/n heads
   c. Are parasitic on constructions used for measuring (Cheng and Sybesma
      1998, Rothstein 2011) and kind reference (Nomoto 2013)
   d. Impossible with mass nouns (Cheng and Sybesma 1999, Doetjes 2012)

(13) Dafing count classifiers occur with numerals
   a. wúrú (dèn) flá/(=ɔ́)
      dog clf two (= two)
      ‘(the) two dogs’
   b. kɔ́: *(mɔ́) flá/(=ɔ́)
      father clf two (= two)
      ‘(the) two fathers’

(14) n-heads such as the agentic nominalizer bàá can co-occur with classifier
   a. nĩ́ɛ́-bɔ́i
      bicycle ride
      ‘ride a bike’
   b. nĩ́ɛ́-bɔ́i-bàá
      metal-horse-ride-AG.NOM

(15) Identical constructions are used for measure classifiers (15-b-c)
   a. tómàtì kilóó ’sábá
      tomato kilo three
      ‘three kilos of tomatoes’
   b. tómàtì bɔ́tsá ’sábá
      tomato bag three
      ‘three bags of tomatoes’

(16) Count classifiers are impossible with mass nouns
   a. ʒè fìɛ̀rɛn flá
      water cup two
      ‘two cups of water’
   b. ʒè dèn flá
      water clf:hum two

2.2 Analysis of numeral classifiers

(17) Inflected nouns can be split into three separate projections
   a. Spanish: /perr-o-s/ ‘dogs’
      NumP
        Num/Clf                                nP
          [+PL]                n              √DOG
          -s                   [MASC] perr
          -o

b. n hosts gender (Kramer 2015) and uninterpretable number features

c. Num is the locus of interpretable number features (Harbour 2011,
   Kramer 2016) and of count classifiers (Borer 2005).
3 Plurality in Dafing

Recall the claim from (7), lightly revised:

If a language has numeral classifiers, then there is no \( n^0 \)-to-\( \text{Num}^0/\text{Clf}^0 \) movement

a. Consequence 1: Dafing allows free-standing classifiers because \( n \) doesn’t move to \( \text{Num} \); \( \text{Num}-n \) never form a morphological word.

b. Consequence 2: Dafing bare \( nP \)s are possible, and should allow general number interpretations (Deprez 2005, Wiltschko 2008)

c. Consequence 3: Plural marking is not a nominal affix and will have a marked plural interpretation.

\[1\] I am assuming that numerals are heads in Dafing, see e.g. Cheng and Sybesma (1999), Borer (2005), Ionin and Matushansky (2006), Simpson (2005).

\[3\] For arguments for \( N \)-to-\( \text{Num} \) movement in English, see, e.g., (Wiltschko 2008).
(25) Plural clitics can’t occur with numerals or numeral classifiers
a. wūrū ḍen sābā
   dog CL-HUM three
   ‘three dogs’

b. wūrū ḍen sābā=ɔ́
   dog CL three=DEF
   ‘the three dogs’

c. *wūrū ḍen sāba=ru
   dog CL-HUM three-PL

d. *wūrū ḍen sābɔ́=ɔ́
   dog CL three=DEF
   ‘three dogs’

(26) Morphological opposition on Num^0 derives plural/classifier complementarity (Nomoto 2013); modeled with binary ±singular feature (Harbour 2011).

a. -ru ⇔ [Num, -Singular]
b. mɔ́ ⇔ [Num, +Singular, +Human]
c. ḍen ⇔ [Num, +Singular, -Human]

3.2 Bare nouns and general number

(27) Extensions of bare nP and [±singular] NumPs:

a. Bare nouns = nP: General number

b. NumP_[±Sg]: Only pluralities

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<tr>
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← kind (the largest plurality)
← groups/pluralities
← atoms/individuals

b. NumP_[±Sg]: Only pluralities

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← Classifiers are necessary with numerals because pluralities get in the way of counting individuals (Chierchia 1998, Ionin 2006, Bale and Khanjian 2009).

3.3 Evidence for general number

(28) Evidence for the semantic claims above:

a. Existential assertions
b. Questions
c. Ellipsis

3.3.1 Existential assertions

(29) a. Bare nouns are used in all low-scope existential assertions, regardless of whether the existence of an individual or group is at issue.
b. To the extent that plural nouns are acceptable, my consultant reports they would only be true of groups.

(30) Bare noun vs. plural in existential context

a. wūrū-û ḍazăá bē
   dog=cop H. at
   ‘Hazaa has a dog.’ TRUE: if H has one dog.
   TRUE: if H has two dogs

b. ?wūrū-rū=û ḍazăá bē
   dog-PL-cop H. at
   ‘Hazaa has dogs.’
   FALSE: if H has one dog.
   TRUE: if H has two dogs

3.3.2 Questions

(31) Questions about existence or possession must use bare nouns, and are felicitous regardless of the number (compare Bale and Khanjian 2009 on W. Armenian):

Context: I want to know if Hazaa has any children.

Q: ḍení ḍazăá bē’rê ké?
   child H. at Q
   ‘Does Hazaa have a child?’

A1: sási, ḍení mɔ́ cê nédàn jà(←/jì-á/) bê
   Yes, child CLF one FOC-only be-3SG at
   ‘Yes, but only one child.’
A2: ããã, ðñ ìô flá jà(←/jì-á/) bê
Yes, child clf two be-3sg at
‘Yes, she has two children.’

3.3.3 Bare Argument Ellipsis

Diagnostic: Lexical ambiguity must be resolved across ellipsis contexts (Rullman and You 2006).

(32) John saw a pen and Mary did too.
   a. OK: John and Mary saw a writing implement.
   b. OK: John and Mary saw an animal enclosure.
   c. *John saw a writing implement and Mary an animal enclosure.

(33) Bare argument ellipsis in Dafing:
   a. Hâzâá ní wírú ’sán
      Hazaa PPV dog buy
      ‘Hazaa bought a dog (one or more).’
   b. Rási fânà.
      Rasi too.
      ‘Rasi did too. (bought one or more dogs).’
→ (33-b) is fine even if Hazaa bought one dog and Rasi bought three.

3.4 Summary

(34) a. Bare nPs include individuals and pluralities in extension.
   b. Plural NumPs (with -ru) exclude individuals, only denote pluralities, due to [-singular] feature in Num.
   c. Singular NumPs (with classifiers) only include atoms in denotations, the semantic representation necessary for counting in Dafing, due to [+singular] feature in Num.³

(35) a. Similar facts exist in Turkish and W. Armenian, which having semantically marked plurals (Bale and Khandjian 2009, Bale et al. 2011), and may be a general property of Mande languages.⁶
   b. Both languages have numeral classifiers in limited contexts (Bale and Khandjian 2009, Sag 2016), and hence provide further evidence for Sanches’s Generalization.

4 Classifiers are for nouns (not numerals)

(36) a. The idea that numeral classifiers are Num heads is linked to the assumption that classifiers are for nouns, they enable nouns to be counted (Doetjes 1997, Chierchia 1998, 2010, Cheng and Sybesma 1999, Krifka 2003, Ionin 2006, Nomoto 2013).
   b. On the other hand, Bale and Coon (2014) argue that numeral classifiers are for numerals, i.e., they provide numerals with measure functions (cf. Krifka 1995, Wilhelm 2008, Sudo 2016).

(37) Bale & Coon’s arguments come from numeral sensitivity, e.g. in Mi’gmaq:
   a. Mi’gmaq n = {1, 2, 3, 4, 5} cannot occur with numeral classifiers
      na’n (*te’s) -ijig ji’nm-ug
      five CL -AGR man-PL
      ‘five men’
   b. Mi’gmaq n > 5 require numeral classifiers
      asugom *(te’s)-ijig ji’nm-ug
      six CL-AGR man-PL
      ‘six men’

(38) a. Mi’gmaq 1-5 have measure functions built-in, while n > 5 do not.
   b. Bale & Coon’s argument is convincing, and I concur that classifiers may be for numerals in such languages.

(39) Two arguments that classifiers are for nouns
   Argument 1: Noun sensitivity (the counterpart of numeral sensitivity)
   Argument 2: Different classifiers have different distributions

4.1 Argument 1: Noun sensitivity

If classifiers are for numerals in Dafing, the choice of noun shouldn’t matter. But certain nouns can’t occur with numeral classifiers at all:

(40) Inherent measures noun: té: ‘day’
   a. té:-rú
      day-PL
      ‘days’
   b. té: (*ðèn) flá
      day CL:-HUM two(=DEF)
      ‘two days’

³See Bale et al. (2011) and Nomoto (2013) for discussion of variation in numeral meanings.
⁶For example, Welmers (1974:p. 214), reports similar facts in Kpelle (W. Mande).
Compounds formed with the provenancal suffix -kà

a. bóbóó-kà
   'boboese, people from Bobo (Bobojulaso)'

b. bóbóó-kà-rù
   'boboeses, people from Bobo'

c. bóbóó-kà (*mɔ́) flà
   'two boboese'

→ The availability of -ru shows that té: 'day' and bóbóó-kà are nouns.

If classifiers are for nouns, such irregularities are expected: Nouns like té: 'day' and bóbóó-kà 'aboboese' are semantically partitioned for counting by default, possibly because they lack pluralities in their extension.

If classifiers are for numerals:

a. A null classifier cannot save this analysis, since such a classifier for a human noun like bóbóó-kà should be available for all human nouns.

4.2 Argument 2: Different distributions of classifiers

Different classifiers have distinct distributions in the noun phrase:

The subkind classifier sì 'kind, group' can occur with determiners like vjé 'all' and mín 'this', which are impossible with count classifiers:

a. wúrú sì flà
doğ  CL:KIND two
   'two kinds/groups of dogs'

b. wúrú sì vjé
doğ  CL:kind every
   'all kinds of dogs'

c. wúrú sì mín
doğ  CL:kind this
   'this kind of dogs'

d. wúrú (*dèn) vjé
doğ  CL:-HUM all
   'all dogs'

e. *wúrú sì-rù
   'types of dogs'

4.3 Classifier-plural competition redux

Recall that plural clitics can’t occur with classifiers in Dafing (25):

a. wúrú dèn sábá
   dog  CL:-HUM three
   'three dogs'

b. wúrú dèn sábà
   dog  CL:-HUM three=DEF
   'the three dogs'

c. *wúrú dèn sába-rù
   dog  CL:-HUM three-PL

d. *wúrú dèn sábà=́rù
   dog  CL:-HUM three-DEF.PL

Mensural classifiers like bọ́tọ́ 'bag' occur with determiners and plural clitics:

a. tómàtì bọ́tọ́ flà
   tomato μ:bag two
   'two bags of tomatoes'

b. tómàtì bọ́tọ́ vjé
   tomato μ:bag every
   'all bags of tomatoes'

c. tómàtì bọ́tọ́ mín
   tomato μ:bag this
   'this bag of tomatoes'

d. ?tómàtì bọ́tọ́=́rù
   'bags of tomatoes'

Mensural classifiers cannot co-occur with count classifiers, so they are 'true' classifiers:

a. bọ́tọ́ dèn  sábá
   bag  CL:-HUM three
   'three bags'

b. tómàtì dèn  sábà
   tomato bag  CL:-HUM three

These facts follow directly if classifiers are for nouns:

a. Because sì 'kind' changes the domain in which the noun refers (Nomoto 2013), it is required for quantification over subkinds.

b. Because measures like bọ́tọ́ 'bag' retain their nominal syntax, they can occur either in CLf/Num or as compound nouns.

These facts are unexpected if classifiers are for numerals; we wouldn’t expect classifiers to supply predicates for pluralization or to restrict quantifiers.
Two explanations for classifier-plural complementarity
a. Semantics: Dafing plurals and classifiers have contradictory semantics.
b. Syntax: Dafing plurals and classifiers realize different features of Num.
   → These are not incompatible; they should go together!

Classifier-plural complementarity follows from the classifiers for nouns hypothesis, as both plurals and classifiers are manipulating noun semantics.

In contrast, Mi’gmaq and Chol both have plurals co-occurring with numeral classifiers, indicating either that their plurals are uninterpretable, in n, that classifiers are for numerals, or both.

Two kinds of classifier languages?

- **Type 1** (Dafing): Plural marking competes with classifiers, which are 'for nouns' (true in most 'traditional classifier languages')
- **Type 2** (Mi’gmaq/Chol): Plural marking does not compete with classifiers, which are 'for numerals'

5 Summary

Sanchez-Greenberg-Slobin Generalization (final version): In Type 1 classifier languages, plural reference is possible without overt plural morphology on the noun.

An explanation:
- Numeral classifiers and plural marking occurs in Num in the absence of n-to-Num movement.
- Because n does not move to Num in such languages, bare nPs will be available, which will be interpreted with general number.

This explanation relies on some unstated assumption:
- Head-movement is always obligatory, leading to obligatory inflection.
- In contrast, morphologically and syntactically independent heads can be freely omitted, as long as semantically appropriate.
- This proposal offers a potential explanation why functional words are often freely omitted in many analytic languages.

Acknowledgements

All Dafing data in this paper are based on elicitation with a native Dafing speaker, Rassidatou Konate, in Berkeley from February-December 2016. I am deeply grateful to Rassi for her help on this project. Thanks too to the awesome participants of my undergraduate field methods class in Spring 2016, and to Jack Merrill, Hannah Sande, and especially Maria Khachatryan for illuminating discussions.

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