Measure words, Plurality, and Cross-Linguistic Variation

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Leiden University
September 02, 2015

1 Roadmap

The paper is organized as follows:
Section 2 introduces the puzzles and the suggested hypotheses.
Section 3 presents an overview of the problem and introduces the existing theoretical background.
Section 4 proposes a unified solution for the puzzle.
Section 5 provides an independent evidence from other languages.
Section 6 summarizes and concludes.

2 Aim of the paper

2.1 The puzzles

1. Why do measure words in some languages necessarily pluralize but not in others?
2. What does the plural marker do in these languages if plural is not necessarily marked?

2.2 The hypotheses

1. Measure words are classifiers rather than simple nouns.
2. The plural marker on the classifiers is a higher plural, i.e, counting plural.
3 The data and theoretical analysis

Measure words, e.g, *kilo*, *bottle*, *slice* in English, French and Spanish are necessarily pluralized but the measure words found in many other languages, i.e, Azeri, Ojibwe and Persian appear to be in singular form.

(1) three kilos/*kilo of sugar [English]

(2) niizh-naagans ziisbaakwad
two-cup sugar
‘two cupfuls of sugar’ [Ojibwe]

(3) iki piyala şəkər
two cup sugar
‘two cupfuls of sugar’ [Azeri]

(4) do livan şəkər
two cup sugar
‘two cupfuls of sugar’ [Persian]

3.1 Borer 2005

Borer (2005) proposes that the role of the measure word is identical to the plural marker in non-measure constructions (e.g.*,three cats, two dogs*).¹

(5) DivP

(6) DP

Borer’s (2005) seminal idea is that nominal roots in the world’s languages are underlingly neutral (neither count nor mass) and that in English-type languages the plural acts like a classifier of the type found in Chinese-type languages.

In cases where there is a co-occurrence of a measure word and a classifier, Borer considers a measure word that base generates at a lower complement NP position as shown in (7-a) for mass nouns and (7-b) for count. For consistency purposes the measure word needs to be base generated in NP. This leaves the DivP for the plural morpheme on the measure word.

¹The role of plural for Borer is to divide and consequently must be generated under the division head described in the earlier chapters of her monograph, namely Div⁰.
This might explain the appearance of measure word in English like languages but is not a sufficient explanation for Azeri type languages.

(7) a. #P
    two #
    # DivP
     Div NP1
      -s N1 NP2
       bottle N2
        milk

b. #P
    two #
    # DivP
     Div NP1
      -s N1 NP2
       bottle+s N2
        milk

(8) a. #P
    two #
    # DivP1
     Div1 NP1
      -s N1 DivP2
       box Div2 NP2
        N2 book

b. #P
    two #
    # DivP1
     Div1 NP1
      -s N1 DivP2
       box+s N2
        t book+s
4 Measure words as classifiers

The situation for Azeri and Persian is different since these languages have general number and plural marker does not appear in most of the cases for plural reading. The examples in (9) give a plural measure reading without the appearance of the plural marker.

(9) a. niizh-naagans ziisbaakwad
two-cup sugar
‘two cupfuls of sugar’ [Ojibwe]
b. iki piyala badam
two cup almond
two cupfuls of almond [Azeri]
c. do livan badam
two cup almond
‘two cupfuls of almond’ [Persian]

In Ojibwe, Azeri and Persian (and in many other languages, as far as we can tell), no extra –s needs to surface, which is what we would expect if it is the measure head that is responsible for division.²

Puzzle: Why English-type languages require plural marking on measure words while other languages with plural marking do not?

4.1 Hypothesis

We hypothesise that, since measure words in Ojibwe, Azeri and Persian can perform division in the absence of the plural, the measure words are introduced directly under Div⁰ (see also Chierchia 1998, Stavrou 2003, Mathieu 2012, and a variation of this in Harbour 2008 where measure words are generated in the specifier of Div⁰; and also Corver 1998 and Schwarzschild 2006 according to whom measure phrases are in the specifier of a functional head) rather than in a lower NP (as in Borer 2005).³

The illustration for such an argument is shown in (10) for Azeri, (11) for Ojibwe and (12) for Persian.

²In our view, measure words of the type bottle, cup, etc. are just like unit nouns such as head in English (as in three head of cattle, see Acquaviva 2008, Chapter 6) and like mass classifiers in languages such as Chinese, which makes them functional (or semi-functional) heads rather than lexical heads.

³We know independently that Chinese count classifiers and mass classifiers are in complementary distribution (an important observation that cannot be ignored, Cheng and Sybesma 1999, Fassi Fehri and Vinet 2007)
4.2 An existing view: Borer (2005)

In Borer (2005) in Azeri type languages the numerals are generated in DivP and raise to #P to assign number to the structure, as in (13). The expected structure for Azeri type languages will be in (14).

(13) #P
    /\                       /\                      \
  numeral  i               iki
    |                   /\                 /\           \
  t_i            DivP   piyala    DivP
                  'two'                'cup'

(14) #P
    /\                       /\                      \
  iki          DivP       iki
    |                   /\                 /\           \
  t_i            NP      DivP     kitab
                  'two'       NP

|               |                     |
| 'book'       |
4.3 What are the consequences?

Problem: The languages under discussion have plural marking in their nominal constructions and if the numerals are considered to be generated under DivP, then the co-occurrence of the plural marker with the numeral will be problematic since the occurrence of them is expected to be in complementary distribution, as shown in (15) for Ojibwe and (16) for Azeri and Persian.

(15) niizh naagansan
    niizh naagans-an
    two cup-PL
    ‘two cups of sugar’ [Ojibwe]

(16) a. iki şokar piyala-lar-i-m išlot-di-m
    two sugar cup-PL-ACC-GEN use-PAST-1SG
    ‘I used two cups of sugar’ [Azeri]

    b. do livan-ha-ye šekær-ra estefade kærd-æm
    two cup-PL-EZ sugar-ACC use AUX.PAST-1SG
    ‘I used two cups of sugar’ [Persian]

In some languages such as German where pluralization is optional for some measure words, as in (17).

(17) zwei Blatt/Blätter Papier
    two piece/pieces paper
    ‘two pieces of paper’ (Ott 2011:17) [German]

Puzzle: What is the role of the plural marker if it is not necessarily marking plurality?

It appears that “pluralization of the numeral classifier yields an amount interpretation whereas the singular variant denotes a quantity” (Ott 2011:18, see also Acquaviva 2008, Chapter 6).

Such an ambiguity is also observable in the languages under discussion. In other contexts, i.e. non-measure environments, where we obtain a simple container rather than a measure
reading, there is no problem for words such as cup, bottle, etc. to be pluralized. The examples in (18), (19) and (20) are evidence for container vs. measure reading.

(18) a. niizh naagans ziisbaakwad
two cup sugar
‘two cupfuls of sugar’ (measure reading)
b. niizh naagans-an ziisbaakwad
two cup-PL sugar
‘two cups of sugar’ (container reading) [Ojibwe]

(19) a. iki piyala badam
two cup almond
two cupfuls of almond (measure reading)
b. iki şokor piyala-lar-i-m ışłat-di-m
two sugar cup-PL-ACC-GEN use-PAST-1SG
‘I used two cups of sugar’ (container reading) [Azeri]

(20) a. do livan badam
two cup almond
‘two cupfuls of almond’ (measure reading)
b. do livan-ha-ye şekær-ra estefade kærd-æm
two cup-PL-EZ sugar-ACC use AUX.PAST-1SG
‘I used two cups of sugar’ (container reading) [Persian]
4.4 Proposal to a unified solution?

In English and all the languages under discussion the measure word assigns division, and the plural marker (-s) on the measure word is a higher plural, namely a counting plural (under #), rather than a lower plural under DivP. This concludes that there are different kinds of plurals (Acquaviva 2008, Mathieu 2012, 2013, 2014) as illustrated in (21-a).

(21) a. [Persian] #P
   do #
two # DivP
   Div NP
   livan NP
cup  šekær
   sugar

b. #P
   two # DivP
   Div NP
   livan+ha-ye cups t NP
   šekær sugar

We propose that the ambiguous reading of the measure words correspond to two different structures, as illustrated in (22-a) and (22-b).\(^4\)

(22) a. [container reading] #P
two # DivP
   # Div NP1
   cup+s N1 NP2
   t N2
   sugar

b. [measure reading] #P
two # DivP
   # Div NP
   cup+s t NP
   sugar

\(^4\)Note that, on our view, the semi-functionality of measure words is derivative: it is a by-product of certain syntactic structures (Cardinaletti and Giusti 2001), rather than a lexical property (van Riemsdijk 1998). See Alexiadou et al. (2007:474) for discussion about this issue.
4.5 To sum up

We propose that measure words are classifiers (rather than simple nouns as in Borer 2005) and that the –s that surfaces on English measure words (and also Azeri-type languages) is a counting, rather than a dividing plural, providing further evidence (see Mathieu 2012, 2014) that we need a counting plural in addition to the more established dividing plural.

We argue that whether or not plural marking appears on the measure word depends on a higher projection that expresses the counting function (distinct from the classifying/measuring function, Rothstein 2010b).

Measure constructions thus provide evidence for the idea that, in addition to the dividing plural, we need a higher, counting plural, bolstering the hypothesis that the plural comes in many flavours (Acquaviva 2008, Harbour 2008, Wiltschko 2008, 2012, Butler 2012, Mathieu 2012, 2013, 2014).

5 Independence Evidence for the counting plural

In singulative languages (Breton, Welsh, Arabic), collective nouns (that are semantically plural but morpho-syntactically singular) and mass nouns can be the input to an operation that creates individuals (via gender shift in many languages, e.g. Breton, Arabic): either to “an individual member of the collection” or a “specific quantity of a substance” (Ojeda 1992). Mathieu (2009, 2012) argues that singulative markers are generated under Div0 (see also Zabbal 2002, Fassi Fehri 2003, 2012).

In (23) burtogaal ‘oranges’ is a collective noun (morpho-syntactically singular and masculine, semantically plural) that can be individuated with the feminine suffix –a(h). Then, burtogaala(h) ‘an orange’ can be pluralized to give burtogaalaat ‘oranges’. In (18b), we have a mass noun t.een ‘mud’ that can be individuated by way of the singulativizer suffix –a(h) to give t.eena(h) ‘a chunk of mud’, a measure reading, and this can be pluralized to yield t.eenaat ‘chunks of mud’.

(23) a. burtogaal burtogaal-a(h) burtogaal-aat
‘oranges’ ‘an-orange’ ‘oranges’

b. t.een t.een-a(h) t.een-aat
‘mud’ ‘chunk-of-mud’ ‘chunks-of-mud’

[Arabic]
Since the singulative marker is responsible for the division, it is generated under Div0 as in (24).

(24)  

```
  #P  
  |  
  #  
  
  #  
  |  
  DivP  
  
  -at  
  |  
  Div  
  |  
  NP  
  |  
  -a(h)  
  |  
  N  
  |  
  burtagaal
```

The plural is added at the next level, namely under #0, then head movement applies to give (25).

(25)  

```
  #P  
  |  
  #  
  
  #  
  |  
  DivP  
  
  burtagaal+a+at  
  
  Div  
  |  
  NP  
  |  
  t  
  |  
  N  
  |  
  t
```

Borer and Ouwayda (2010) take these facts to indicate that, after individuation is realized by the singulative, the plural becomes a mere agreement marker (it agrees with the numeral). But there are several problems with this analysis:

• **First**: The agreement in question is not always necessary.

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6 The Arabic examples are from Saudi dialect, otherwise they are specified.
• **Second:** The plural of singulatives is an agreement marker comes from cases where numbers above 10 are used.

(27) a. ?akalt-u thalaath-a ašrat-a samak-at-a-n
    ate-I three-MS.ACC teen-FM.ACC fish-SING-ACC-NUN
    ‘I ate thirteen fish/fishes.’

b. raʔeit-u xamsa-a ašrat-a baqar-at-a-n
    saw-I five-MS.ACC teen-FM.ACC cow-SING-FM.ACC-NUN
    ‘I saw fifteen cows.’ [Arabic]

• **Third:** In singulative languages other than Arabic, the numeral constraint for numbers between 2 and 10 is not attested.

(28) a. ?akalt-u tamr-a-at-i-n fi ʔas-sabaḥ-i
    ate-I dates-SING-PL-GEN-NUN in the-morning-GEN
    ‘I ate dates in the morning.’

b. kasara ʔub-a-at-i-n
    broke-he bricks-SING-PL-GEN-NUN
    ‘He broke bricks.’

c. qaṭaʃ-u naḥl-a-at-i-n
    cut-they palm.trees-SING-PL-GEN-NUN
    ‘They cut palm trees.’ [Arabic]

• **Fourth:** Plurals of plurals (broken plurals that are pluralized) can appear without a numeral

(29) ?iṣtarat ʔasawir.
    bought. she bracelets
    ‘She bought bracelets.’ [Arabic]

(30) a. radʒul ridʒaal ridʒaalaat
    ‘a man’ ‘men’ ‘men’

b. beyit beyuit beyuitaat
    ‘a house’ ‘houses’ ‘houses’ [Arabic]
There are groups of houses and he lives in one house which cannot be exactly pinpointed.

(32) a. ktéb ktob ktobbét
‘book’ ‘books’ ‘books’

b. hsaan hsonna
‘horse’ ‘horses’
hsonnét
‘horses’

[Tunisian Arabic]

(33) a. chrit ktobb-ét
buy.PAST.1SG book-PL
‘I bought books.’

(lit.) ‘I bought a few books.’

b. choft hsonn-ét
see.PAST.1SG horses-PL
‘I saw horses.’

(lit.) ‘I saw a few horses.’

[Tunisian Arabic]
6 Summary and Conclusion

- Measure words are universally generated under DivP.

- Plurals on measure words are higher plurals which means they belong to the category of counting plurals rather than dividing plurals.

- The view that plurality is about counting thus appears to be on the right track and cannot be completely ignored, even if we grant a dividing function to the plural as is done in Borer (2005) and elsewhere.

References


