

## Plurality and measure words: classifying versus counting

**Proposal** In the context of Borer's (2005) theory of nominal classification, the aim of this paper is to explain why measure words in some languages (English, French, Hebrew) necessarily take an *-s* (*two bottles of milk* vs *\*two bottle of milk*) while in other languages (Azeri, Persian, Ojibwe) measure words can surface in the singular (the equivalent of *two bottle of milk* is grammatical). If we assume *-s* in English-type languages is responsible for division in measure constructions (as in Borer 2005), we face the following puzzle: What is responsible for division in Azeri-type languages in the absence of the plural? We argue that, for a number of reasons, it cannot be the numeral (*two*) and propose that division is performed, in the absence of a plural, by measure words themselves (as in Chierchia 1998, Stavrou 2003, Acquaviva 2008). 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, Butler 2012, Mathieu 2012, 2013, 2014).

**Theory** Borer (2005, Chapter 8) proposes that the role of the plural that appears on the measure word in measure constructions is identical to that of the plural in non-measure constructions (e.g. *three cats*, *two dogs*): its role is to divide mass and consequently must be generated under the division head described in the earlier chapters of her monograph ( $Cl^0$  as in Borer 2005 or  $Div^0$  as in Borer and Ouwayda 2010). This proposal provides a consistent view of the role of the plural in English-type languages: the plural is one, not many; it appears under  $Div^0$  and its sole function is to divide.

**Puzzle** The present paper addresses the following puzzle. In many languages, the measure word found in measure constructions typically appears in the singular. (1a) is an example from Ojibwe, an Algonquian language, spoken in parts of Canada and parts of the United States. (1b) is an example from Azeri, a Turkic language. (1c) is an example from Persian. The context in which these examples are grammatical is as follows: *Two friends A and B are making a cake. A is mixing the ingredients in a bowl while B, at the request of A, is pouring the ingredients into the bowl. After mixing the eggs and the flour, A asks B: add two cups of sugar.*

- (1) a. niizh-naagans zisbaakwad    b. iki piyala şəkər    c. do livan şəkər  
two cup sugar                      two cup sugar                      two cup sugar  
'two cupfuls of sugar'                      'two cupfuls of sugar'                      'two cupfuls of sugar'

Here, it is not possible to interpret the measure word as referring to a simple container. B uses one cup and fills it with sugar so that the measure is two cupfuls. It is not natural for B to present A with two cups (i.e. two containers) full of sugar. Rather, B pours one cup of sugar, then refills it and then pours the content of the second load into the cake mix.

**Research questions** Adopting Borer's (2005) model of nominal classification, many questions arise: Why is it possible for measure words in Ojibwe, Azeri and Persian to appear in the singular while in English-type languages the measure word is necessarily plural. What is responsible for division in Azeri-type measure constructions when there is no plural on the measure word? What is the role of the plural on measure words in English? What is the role of the plural in Azeri-type languages if a measure word can appear in the singular in the first place? What is the position of the measure word in the tree?

**Solution** We provide answers to these questions. First, we introduce our hypothesis that measure words are classifiers (rather than simple nouns as in Borer 2005) and that the *-s* that surfaces on English measure words 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. On our view, measure words of the type *bottle*, *cup*, etc. are like *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. In Ojibwe, Azeri and Persian (and in many other languages, as far as we can tell), no extra *-s* need surface, which is what we would expect if it is the measure head that is responsible for division. In the world's languages, classifiers are typically not pluralizable (Aikhenvald 2000). This is often because classifier languages have no plural marking in the first place (Greenberg 1972, Sanches and Slobin 1973, Doetjes 1997), but not always. There are, as is well-known, many exceptions to this generalization (Aikhenvald 2000) and we show in fact that Ojibwe, Azeri and Persian

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have both singular measure words as well a plural marker (specific in Azeri and Persian) available in the grammar. The question is thus why English-type languages have plural marking on measure words while in other languages it is not necessary.

**Hypothesis** Our hypothesis is that, since measure words in Ojibwe, Azeri and Persian can perform division in the absence of the plural and since we 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), measure words are introduced directly under  $Div^0$  (see also Chierchia 1998, Stavrou 2003, Acquaviva 2008, Mathieu 2012, and a variation of this in Harbour 2008 where measure words are generated in the *specifier* of  $Div^0$ ; 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). This is illustrated in (2). The reason why Azeri-type languages have a strict measure construction (where the measure word appears in the singular) is because these languages have, in addition to the plural, classifiers or (residual) classifiers (no longer fully productive in Ojibwe, Valentine 2001). English is a plural language only.

- (2) a. [#P niizh ‘two’ # [DivP Div naagans ‘cup’ [NP N ziibaakwad ‘sugar’]]] Ojibwe  
 b. [#P iki ‘two’ # [DivP Div piyala ‘cup’ [NP N şəkər ‘sugar’]]] Azeri  
 c. [#P do ‘two’ # [DivP Div livan ‘cup’ [NP N şəkər ‘sugar’]]] Persian

This is a solution that has clear advantages over Borer’s view whereby it is the numeral, by being generated under  $Div^0$  that performs division (see Wilhem 2008 for Dëne Sùliné and more generally Krifka 1989). Since these languages have no plural on count nouns, this is not a property of measure constructions only. After division, the numeral raises to Spec-#P, in the counting domain. The problem with this idea is that there appears to be no necessary correlation between the lack of plural marking on the noun in measure constructions and in the case of count nouns. In Ojibwe, for example, measure words are singular; yet, count nouns, unlike what happens in Azeri-type languages, must be pluralized. One says *niizh naagansan* ‘two cups’ and not \**niizh naagans* ‘two cup’.

In order to provide a unified cross-linguistic view of measure heads, we propose for English that it is also the measure word that performs division (for a different view, see Kayne 2005, for whom *pound* in *three pounds of sugar* is not a classifier) and that the *-s* appearing on the measure word is associated with a counting rather than a dividing function. Our view is that the *-s* is an exponent of a higher plural, namely a counting plural (under #<sup>0</sup>) rather than the well-established lower plural (Borer’s) dividing plural (under  $Div^0$ ). This is consistent with the idea that there are different kinds of plurals in the grammar and that, depending on its contextual function, the plural sits in different positions along the spine of the syntactic tree (Acquaviva 2008, Wiltschko 2008, Harbour 2008, 2012, Mathieu 2012, 2013, 2014, Butler 2012). Consider (3) as a way of illustration. The measure word raises to # via head movement.

- (3) a. [#P two # -s [DivP Div cup [NP N ] sugar]] b. [#P two # cup+s [DivP Div \_\_ [NP N sugar]]]

Since sentences such as *two cups of sugar* or *two glasses of wine* are ambiguous between a container reading (*John, bring two glasses of wine for our guests*) and a measure reading (*Add two glasses of water to the soup*) in English (Akmajian and Lehrer 1976, Stavrou 1983, Doetjes 1997, Chierchia 1998, Landman 2004, Alexiadou et al 2007, Rothstein 2010a) and in Azeri-type languages, we propose that two structures are generated. Plural *-s*, again, has thus two functions: a dividing function (4a) or a counting function (4b). Our account is similar in spirit to what Alexiadou et al. (2007) propose in that we have a monoprojectional structure. On our account, however, a  $Div^0$  head is projected in both cases, which is not the case with Alexiadou et al. (2007). 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) a. [#P # [DivP Div cup+s [NP1 N1 \_\_ [NP2 N2 sugar]]]] container reading  
 b. [#P two # cups+s [DivP Div \_\_ [NP N sugar]]] measure reading

**Independent evidence** In the final section of the paper, we will provide independent evidence for the existence of a counting plural in Universal Grammar, exemplifying from plurals of singulatives, double plurals in Arabic and Breton, and plurals of diminutivized mass nouns in Germanic.