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Many a plural

Eric Mathieu
University of Ottawa

The aim of the present paper is to contribute to the literature on plurals by showing that, cross-linguistically, not all plurals are unmarked semantically. Focusing on Arabic, where the plural comes in many guises, and proposing different syntactic positions for its different manifestations, I show that, while classifying plurals (broken and sound plurals) allow an inclusive reading (*one or more*), counting plurals (plural of the singulative and double plurals) do not: they tolerate only exclusive readings (*more than one*). I then show that classifying plurals in Arabic allow inclusive readings in environments that favour number neutrality (modals, negation, etc.) and argue that, in these contexts, plurals denote kinds (in the sense of Carlson 1977 and following Grimm 2013 for English plurals). Such plural nominals do not presuppose the existence of any particular referents: they are weakly referential and that is why they allow inclusive readings.

1. Introduction

Traditionally, the difference between singular nominals and plural nominals is cast in a framework that makes a simple distinction between domains of atoms versus domains of sums. Following Link (1983), nominals take values from a domain of entities that has the structure of a join-semilattice whose atoms are ordinary individuals and whose non-atomic elements are all the possible sums of more than one atom. While a singular nominal chooses its referent from the domain corresponding to the set of atoms in the semilattice denoted by the head noun, the reference domain for a plural nominal is the set of sums in that semilattice rather than the set of atoms.

This elegant and basic account corresponds to the folk view and to the traditional perspective of the plural (Quirk et al. 1985): the singular refers to *one* and the plural to *more than one* and no further question about the topic need be asked.

However, since Krifka (1989) – see also Sauerland (2003), Sauerland et al. (2005), Spector (2007), Zweig (2009) and Bale et al. (2011) as well as earlier studies such McCawley (1968, 1981), Mufwene (1980), Roberts (1986), Ojeda (1992) – a growing trend in the semantic literature has viewed the plural as more complex than previously

thought. Rather than simply referring to *more than one* (the exclusive reading), it is often described as referring to *one or more* (the inclusive reading), in which case the singular is included in the plural.

This inclination is motivated by examples such as (1). While a plural noun such as *children* refers simply to a collection of individuals in a positive, non-interrogative context as in (2), it can, in an interrogative, as illustrated in (1), refer to groups of individuals *as well as* to singular individuals. (1a) and (1b) are indeed possible answers to the question in (1) (cf. Krifka 1989:85).

(1)   *Do you have children?*
      a.   Yes, I have one child.
      b.   Yes, I have two children.

(2)   *I have children.*

These types of data have been taken to indicate that, although the plural is *morphologically* marked (unlike the singular), it is *semantically* unmarked and that, conversely, the singular is *morphologically* unmarked but *semantically* marked (since it refers to atoms only).
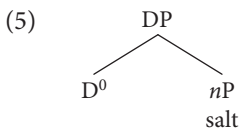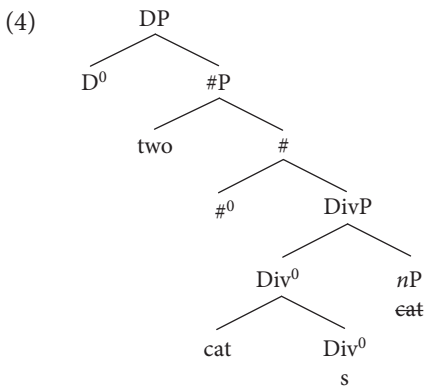
Although the details of the existing semantic accounts of the plural vary, what they have in common is the idea that there is a basic interpretation (e.g. the plural as unmarked for Sauerland 2003 and others; the singular as unmarked for Farkas & de Swart 2010) and that a blocking device rules out the relevant interpretations in upward entailing contexts as well as another context where the blocking does not operate, namely downward entailing.

In parallel with the recent semantic literature, the recent syntactic literature treats the plural as a far more complicated object of study than previously thought. In syntax, the plural is treated as an operation that is not about counting but about dividing (along the lines of classifiers in languages such as Chinese). Borer (2005), for example, takes the data in (3) (originally from Krifka 1989) to suggest that the plural is not an operation on singulars. Instead, the role of the plural is to portion out, divide undivided mass. (3a) is perfectly acceptable as an answer to the question in (3) despite the fact that there is only one (full) individual involved. In fact, as the answer in (3b) to the question (3) shows, the plural need not even refer to individuals at all, since in this case not even *one* child is being referred to.

(3)   *What is the average number of children at home per family in your country?*
      a.   1.3 children.
      b.   0.3 children.

Data such as these have motivated a theory of number where nouns enter the derivation as neither count nor mass, but become count by the addition of structure (neo-constructionist view). In particular, according to Borer (2005), the addition of the

plural has an dividing effect (via a Division head, Div^0). Once mass has been portioned out, the counting function can operate. This is the locus of a higher head, namely $\#^0$, whose specifier is occupied by numerals that specify how many individuals there are in a given context. On this view, the plural functions as a classifier, and the plural and the classifier are in complementary distribution (Greenberg 1972, Sanches & Slobin 1973; Doetjes 1997). The structure in (4) gives the representation for *two cats* (count noun) while the tree diagram in (5) gives the representation for *salt* (mass term). In (4) the noun raises to Div^0 via head movement (the plural is an affix) and the numeral 'two' is added as a counter in Spec-#P.[1]

(4)

```
              DP
           /      \
         D⁰        #P
                /      \
             two        #
                     /      \
                   #⁰        DivP
                          /      \
                       Div⁰       nP
                      /    \       cat̶
                   cat      Div⁰
                             s
```

(5)

```
         DP
       /    \
     D⁰      nP
            salt
```

We see from the discussion above that much progress has been made in recent years in our understanding of the semantic and syntactic properties of the plural. The plural is not just about sums (semantic literature) and its function appears to be that of classifying (syntactic literature). It must be said, however, that although the view of the plural has changed most linguists working on the topic seem to work on the assumption that there is only one plural and that cross-linguistically it behaves uniformly.

The general aim of the present paper is to show that, if we look cross-linguistically, there are languages where the plural is not one but many. In these languages, the plural has different functions in the grammar depending on where it operates in the nominal syntactic spine. I will argue that, if we want to have a full picture of the role of the

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1. For the numeral 'one', singular (atomic) interpretation emerges from the strict identity of Div and #.

plural in grammatical theory, a proper mapping of the plural onto the various syntactic categories of the nominal domain is essential.

I hereby focus on singulative grammatical systems where, I argue, there are two kinds of plurals: one whose function is to classify/divide, the other whose function is to count. I show that, while the former can be inclusive (in the relevant contexts), the latter cannot. This contradicts the idea that plural nominals (in the relevant contexts, e.g. interrogatives, etc.) are *necessarily* interpreted as weakly referential. Weakly referential expressions do not set up individual discourse referents in conversational space, but have a more abstract semantic value, e.g. properties, types, means, activities, etc. (See introduction of this volume). For example, inclusive plurals have been argued to be weakly referential: neither referring to sums or individuals, but to kinds (Grimm 2013) – and kinds are said to be weakly referential. While singulative systems are well-known in the typological literature, they are seldom discussed in the theoretical literature. Building on the scant literature that exists (Zabbal 2002; and Fassi Fehri 2003, 2012), the present paper aims to fill that gap.

The empirical foundation for this paper comes from Standard Arabic and certain Arabic dialects (most notably from Saudi Arabia). Bringing in the discussion so-called sound plurals, broken plurals, double plurals, plurals of collectives as well as idiosyncratic plurals (Corbett 2000), I will argue that there are three distinct positions for the plural: n (lexical plurals, Acquaviva 2008; Lowenstamm 2008; Kramer 2012) where, in most cases if not all, plural nominals are non-referential but where we also find plurals of collectives, Div^0 (classifying plural, Borer 2005), in which case plural nominals are *weakly* referential/inclusive, and $\#^0$ (counting plural), in which case plural nominals are *strongly* referential/exclusive.[2] In the course of the discussion, I will also mention duals and the paucal/greater number distinction in Arabic.[3]

Section 2 discusses the (recent) semantics of the English plural, summarizing the literature. Section 3 discusses sound and broken plurals in Arabic, showing that they have more or less the same semantics as the plural in English (they are weakly referential/inclusive). Section 4 focuses on the plural of singulatives and also discusses the plural of broken plurals (plural of the plural). I show in that section that the plural of singulatives and the plural of the plural are not weakly referential. Section 5 provides an analysis whereby, depending on its function in the grammar, the plural is distributed across three distinct categories. Section 6 concludes.

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2.   The category $\#^0$ is of course Borer's $\#^0$ but what I argue is that, while cardinals are in the specifier of that head (Borer 2005), the counting plural is generated under the head $\#^0$.

3.   The idea that there are different flavours of plurality goes hand in hand with the claim that there are different ways to perform division (Mathieu 2009, 2012a, b).

2.   The plural in English

As was pointed out in the introduction, plurals are not restricted to sums but can sometimes denote atoms. This is particularly true for languages that have a number system based on singulars and plurals (e.g. English, French, etc.). In these languages, the plural is said to allow an inclusive reading, i.e. *one or more*, rather than an exclusive reading, i.e. *two or more.* Although the details of the proposals on this topic vary, what recent semantic studies on the plural (Sauerland 2003; Sauerland et al. 2005; Spector 2007; Zweig 2009; and Bale et al. 2011) have in common is their linking the preferences for the singular or plural interpretation to pragmatic reasoning, and especially to the choice of downward versus upward entailment environments. In downward entailment environments, the plural is interpreted inclusively whereas in upward entailment contexts, the plural is interpreted exclusively. Consider the following downward entailment contexts: a conditional in (6a), a negative in (6b), the restriction of a universal quantifier in (6c).

(6)   a.   If you have children, please raise your hand.
         b.   John didn't visit relatives.
         c.   Every guest who brought presents left early.

(6a) is true for parents with two children or more but also for parents with one child. (6b) is false if John visited two relatives or more but also if John visited only one relative. (6c) is true if a guest brought two presents or more but also even if a guest brought only one present.

    In upward entailment environments (such as the scope of a universal quantifier), the plural appears to be interpreted exclusively as shown by (7). It appears indeed more difficult to think of (7) as true if a guest brought only one present.

(7)   Every guest who came to the party brought presents.

Bale et al. (2011) and others conclude from these facts that, in English, there is a mismatch between morphological markedness and semantic markedness. The singular is unmarked morphologically (there is no morpheme for the singular) but marked semantically (it can refer to atoms). On the other hand, the plural is marked morphologically (by *-s* or its allomorphs) but unmarked semantically (it can mean *two or more* or *one or more*). Table 1 gives a summary (the notion of (morphological) markedness in linguistics goes back to Greenberg 1966). It is used to determine which of two related categories is the more "basic" or "expected". On this view, the present tense is unmarked while the preterit is marked, etc.

    Farkas & de Swart's (2010) recent account of the plural reverses this and proposes that the singular is semantically unmarked while the plural is semantically marked. The reason behind this move is because the authors in question want to keep a strict

Table 1. Markedness in number

	Morphologically	Semantically
Singular	Unmarked	Marked
Plural	Marked	Unmarked

correspondence between morphological and semantic markedness (Horn's division of pragmatic labour or the Horn pattern, van Rooij 2004). It is true, after all, that elsewhere in the grammar we see a strict correspondence between the two kinds of markedness. For example, the present tense in English is considered morphologically unmarked and it appears semantically unmarked compared to the preterit, since it can be used to denote future and even past events. In the same vein, the masculine is unmarked morphologically (for example, new created nouns are masculine by default, e.g. French) but also appears to be unmarked semantically in languages with a gender system that divides nouns between masculine and feminine, since the masculine "wins" over the feminine in plural and other contexts. Table 2 summarizes Farkas and de Swart's (2010) view of the singular and the plural in terms of markedness.

Table 2. Markedness in number in Farkas & de Swart (2010)

	Morphologically	Semantically
Singular	Unmarked	Unmarked
Plural	Marked	Marked

In Farkas and de Swart's (2010) account, there is no singular feature and no special semantics associated with singular forms while plural forms are assumed to involve a semantically potent plural feature. This view of the singular is motivated by cases in Hungarian where sum reference with singular forms is possible when the semantic distinction between singular and plural forms is neutralized. Plurals have a plural feature and are polysemous between an exclusive plural sense, which enforces sum reference, and an inclusive sense, which allows both atoms and sums as possible witnesses. The analysis predicts that a plural form is pragmatically appropriate only in case sum values are among the intended referents. To account for the choice between these two senses in context Farkas and de Swart (2010) invoke the Strongest Meaning Hypothesis, an independently motivated pragmatic principle. The difference in markedness notwithstanding, the analysis nevertheless "shares with the earlier approaches the idea that the competition between singular and plural forms drives their interpretation in a process that intertwines semantics and pragmatics." (Farkas & de Swart 2010: 66).

Turning back to the specific discussion about downward versus upward entailing contexts, let me mention the recent work of Grimm (2013) who shows that tying the inclusive reading of the plural to downward entailing or "scale reversal" environments is generally problematic.

First, as discussed by Sauerland et al. (2005) themselves and as mentioned by Farkas and de Swart (2010), questions are not generally perceived as downward entailing.[4]

Second, as illustrated in (8), modal environments permit inclusive readings: it does not follow that, if the first student that the professor interviews happens to be the perfect research assistant, the professor needs to continue interviewing other students (see the discussion in Giannakidou 2006).[5]

(8)   The new professor should interview students to find a research assistant.

This fact contradicts the idea that downward entailment and reversal of scalar implicatures is a necessary condition for the availability of inclusive readings. Modals are not downward entailing environments nor do they involve reversal of scalar implicatures. The lack of downward entailing is shown in (9) while the absence of scalar implicature reversal is shown in (10), where a standard test demonstrates that implicatures may be preserved (Grimm 2013). It is not clear how Sauerland (2003), Sauerland et al. (2005), Spector (2007), Bale et al. (2011) can account for these facts.[6] Farkas and de Swart's (2010) analysis fares better, since as a *pragmatic* principle, their Strongest Meaning Hypothesis principle can be overridden by contextual pressure, which means that, when appropriate, inclusive interpretations are available even in upward environments.

(9)   The new professor should interview students.
       ≠>The new professor should interview students with red hair.

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4.   As a way out, Farkas and de Swart (2010) propose in passing that questions are nevertheless subject to the same principle of scale reversal as other environments where inclusive plurals are possible (e.g. negation). For example, NPIs are licensed not only in negative contexts, but also in interrogatives.

5.   Grimm (2013) shows that these observations can also be extended to certain transitive opaque verbs such as *look for* that have been shown to allow upward monotonic inferences (see Zimmermann 2006). If someone utters (i) in a supermarket, it does not imply that he/she is looking for groups of two or more light bulbs. When the first relevant light bulb is found, the search can stop.

       (i)   I am looking for light bulbs.

6.   In four image verification experiments, Anand et al. (2011) find that the effect of monotonicity direction for the interpretation of plurals is small and that it is thus not a decisive factor in plural interpretation.

(10)   The new professor should interview three students.
⇒ "exactly" three (implicature preserved)

Two additional pieces of evidence strengthen Grimm's observations. First, it seems to me that inclusive readings are also available in the scope of universal quantifiers when a possessive is used and this despite the fact that it is not a downward-entailing environment. (11) is true even if a mother came to the party with *one* child. The possessive is thus noteworthy because it changes the meaning (for reasons still poorly understood).

(11)   Every mother who came to the party brought her children with her.

Second, although (12a) appears to be an adequate question to ask someone upon meeting them for the first time, (12b) is not. In contrast, using (13a) is odd while (13b) is much more natural. It is not clear how this contrast can be accounted for under the 'downward-entailing' or 'reversal of scalar implicatures' view, since we appear to have the same environment (a yes-no question) in both (12) and (13) and we have the same implicatures. Since most people are likely to have only one car (unless shown otherwise), it makes no sense to use an expression that is number neutral: the singular is preferred. This shows that the context is important, but without needing to appeal to contexts that are necessarily downward-entailing.

(12)   a.   Do you have children?
       b.   Do you have a child?

(13)   a.   Do you have cars?
       b.   Do you have a car?

Finally, Grimm (2013) shows that a solution that would link the availability of inclusive plural readings to NPI-licensing environments would fail because it would both under- and over-generate. Positions that license NPIs may fail to license the inclusive reading, as in the case of emotive factives, shown in (14).

(14)   a.   I am surprised that anything was there. [NPI OK]
       b.   I am surprised that boxes were in the office. [exclusive plural only]

The examples in (15), with the quantifier *both*, provide evidence that where an NPI cannot be licensed it is conversely a perfect environment for an inclusive plural to be licensed.

(15)   a.   #Both students who saw anybody reported to the police. [NPI not OK]
       b.   Both students who saw spies reported to the police. [inclusive plural]

Grimm (2013) thus concludes that inclusive plurals are made possible not due to their grammatical environment, but are instead intimately linked with the overall discourse context (a proposal which would also explain (12) and (13) as well). The environments

where the inclusive reading is possible are contexts where the nominal does not presuppose the existence of any particular referents, i.e. where the nominal is weakly referential. For example, negation and modals both allow for contexts where no reference to any particular objects is made. In particular, Grimm (2013) proposes that plurals in these contexts are interpreted as kinds.

The idea that bare plurals denote kinds is of course associated with the work of Greg Carlson who, as is well-known, has proposed that a bare plural is not the simple plural equivalent of its singular indefinite counterpart (in English, *books* is not the equivalent of *some books*). Bare plurals have narrow scope and are weakly referential. The syntactic/semantic context in which they appear determines the interpretation they receive rather than anything in the noun phrase (they are not ambiguous). Later work on inclusive/exclusive readings of plurality indicated that interrogative, conditional and negative contexts are somehow special in that they also favour the use of bare plurals as kinds. These environments all involve nonspecific entities. In fact, Carlson notices this himself (Carlson 2003): "One particular issue that has received only minor attention in the literature (see for instance Longobardi 1994) is whether BP's are real contrasting plurals in the sense of excluding singular objects from their denotations. It appears to make some sense, at least, to claim that a question like "Are there holes in the wall?" is truly answerable with "Yes" under the circumstance where just one hole is in the wall and no more. If this is so, it argues that BP's are not indefinite plurals that stand in contrast to the indefinite singular, but rather forms whose interpretation encompasses both." (Carlson 2003: 155).

To conclude Section 2: it was shown that English plurals allow inclusive readings in environments that favour number neutrality: nominals are, in this case, weakly referential. In these contexts, plurals in English denote kinds (in the sense of Carlson 1977) and that is why they allow inclusive readings. In the next section, I turn to Arabic and show that one kind of plural in the language behaves very much like the English plural just reviewed. In Section 4, I will contrast this kind of plural with the plural of singulatives and show that the latter is not weakly, but strongly referential.

3.   The classifying plural in Arabic

In this section, I want to compare the English plural with the Arabic plural. When I say "the Arabic plural", the implicature is that there is only one plural in the language, but in fact there are many plurals in Arabic. I thus need to clarify at the outset what kind of plural I am referring to. Under discussion in this section is the classifying plural in the sense of Borer (2005), i.e. the plural that was described in Section 2 for English. I introduce sound plurals and then turn to broken plurals.

The examples in (16) and (17) show that sound pluralisation process in Arabic is similar to the one in English: the singular is morphologically unmarked while the plural is morphologically marked. The forms given in (16) are masculine (nominative and accusative/genitive) and the forms given in (17) are feminine (nominative/accusative/genitive).

(16) Singular   Plural   Masculine
      mudarris-   mudarris-uun (Nom) mudarris-een (Acc/Gen)   'teacher/s'
      muhandis-   muhandis-uun (Nom) muhandis-een (Acc/Gen) 'engineer/s'

(17) Singular   Plural   Feminine
      mudarrisa(h)   mudarrisaat-un/in (Nom/Acc/Gen)   'teacher/s'
      muhandisa(h)   muhandisaat-un/in (Nom/Acc/Gen)   'engineer/s'

Consider a noun such as *mudarriseen* 'teachers' (masculine/accusative) in contexts that favour weak referentiality. The interrogative in (18) can be answered either by 'Yes, I have three' or 'Yes, I have one.' (19), involving a conditional is true for students with met two children or more but also for students who met one teacher. (20) is false if Ali met two teachers or more but also if Ali met only one teacher. (21) is true if a student met two teachers but also even if a student met only one teacher.

(18) *hal qaabalt   mudarriseen*?
      Q   met.you teachers$_{ACC}$
      'Did you meet teachers ?'

(19) *ʔitha qaabalt   mudarriseen, ʔerfeʕ yadak.*
      if   met.you   teachers$_{ACC}$ raise hand.your
      'If you met teachers, raise your hand.'

(20) *maa qaabaltu   mudarriseen.*
      not met.I   teachers$_{ACC}$
      'I didn't meet teachers.'

(21) *kullu   ṭaalibin   qaabala mudarriseen ɣaadara mubakiran.*
      every$_{NOM}$ student$_{GEN-NUN}$ met   teachers$_{ACC}$ left   early$_{NUN}$
      'Every student who met teachers left early.'

As was the case with the English plural, it is possible, as shown in (22)–(24), for the Arabic plural to appear in modal environments with an interpretation that does not imply that the person uttering the sentence has in mind to find, consult or accept groups of two or more engineers or applicants. These facts combined with the above indicate that the plural in Arabic behaves like the English plural: it is weakly referential and interpreted as a kind.

(22) *ʔabḥathu ʕan muhandiseen.*
      looking.I for engineers$_{GEN}$
      'I am looking for engineers.'

(23) *yajibu ʔan yastaʃira muhandiseen.*
must that he.consult engineers$_{ACC}$
'He must consult engineers.'

(24) *yajibu ʔan yaqbla ʔal-ʔustaathu mutaqadimeen.*
must that accept the-professor$_{NOM}$ applicants$_{ACC}$
'The professor should accept applicants.'

Let me now turn to broken plurals and begin with a definition. Sound plurals (the Arabic plurals discussed in detail so far) are formed by adding a plural suffix to a stem. On the other hand, broken plurals undergo a change of the stem to indicate plurality, in which case there is no additional suffix. Although it is tempting to view broken plurals as irregular forms (the morphological change is stem internal and the noun systematically surfaces as feminine when the input noun can often be masculine), it has been shown that they are, in fact, quite regular morphologically (see Acquaviva 2008 for discussion) and that, in addition, they do not carry special meanings.

In sum, the broken plural behaves exactly like the sound plural. In fact, it turns out that, in the relevant environments, the broken plural is interpreted inclusively, i.e. as a weakly referential nominal, thus referring to a kind, just like the sound plural. Both (25a) and (25b) are possible answers to the question in (25). (26) involves a conditional and is true if you met two children or more but also if you met only one child. (27) is false if I met two teachers or more but also if I met only one teacher. (28) is true even if one mother came with a single child.

(25) *hal ʃindik ʔaṭfaal?*
Q have.you children
'Do you have children?'

    a. *na'ʃam, ʃindi waahid*
yes, have.I one$_{MAS}$
'Yes, I have one child.'

    b. *na'ʃam, ʃindi thalaathah.*
yes, have.I three$_{MAS}$
'Yes, I have three children.'

(26) *ʔitha qaabalt ʔaṭfaal, ʔerfeʃ yadak.*
if met.you children raise hand.your
'If you met children raise your hand.'

(27) *Ali laysa ladeihi ʔaṭfaal.*
Ali not have$_{MAS}$ children
'Ali doesn't have children.'

(28) *kullu ummin ladeiha ʔaṭfaal ɣaadarat mubakiran.*
every$_{NOM}$ mother$_{GEN}$ have$_{FEM}$ children left$_{FEM}$ early$_{ACC}$
'Every mother who had children left early.'

As was the case with the sound plural, it is possible for the broken plural to appear in a modal environment where the interpretation of the plural is clearly inclusive. The relevant example is (29).

(29)   *ʕulamaaʔu   ʔan-nafsi   yajibu ʔan yafḥaṣu ʔaṭfaalan*
    scientists$_{NOM}$ of-psychology$_{GEN}$ must   that test$_{PL}$ children$_{ACC}$
    'Psycholinguists should test children… [to prove their discovery].'

To summarize Section 3, the sound plural and the broken plural behave similarly when it comes to their interpretation: both kinds of plural nominals are interpreted inclusively. They are weakly referential. In the next section I turn to collectives and the singulative, with special reference to Arabic.

4.   The plural in singulative systems

The singulative is a property of Celtic, Semitic, Gur (Niger-Congo) and some North-American aboriginal languages (Mathieu 2009, 2012a, b). It has been greatly discussed in the typological literature, but has, until recently, somehow been ignored in the theoretical literature.

Arabic is a language with a productive singulative operation in its grammar. It has a series of collective nouns denoting groups that can be turned into individuals via the use of the singulative.[7] The singulative is a morpheme *-t* added to a root noun that involves gender shift: the collective noun is masculine while the singulative is a feminine form (identical to the feminine morpheme *-t*). This is shown in (30). It must be noted that when in final position the morpheme is pronounced *-h* whereas when it is followed by a Case marker and/or nunation or linked to the following word it is pronounced *-t*.[8] The singulative only refers to atoms (it can never refer to sums). Collective nouns bear no plural morphology but are definitely interpreted as sums, since

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7.   As pointed out by Gil (1996), there are many uses of the term 'collective' in the literature and it is confusing. By 'collective', I mean herein a singular form with plural reference in a singulative language. Collectives in such languages are not unlike 'collectives' such as *furniture* in English. They might have the same semantics, namely their denotation has the structure of a semilattice (Zabbal 2002). However, there are many differences between the two kinds of collectives. *Furniture*-type collectives cannot appear with numerals directly and although this is true for Arabic collectives for numbers ranging from 2 to 10, numbers above 10 in Arabic surface with numerals directly. From that point of view, Arabic collectives behave more like general number – in the sense of Corbett (2000).

8.   In Arabic, nunation is a special suffix added to a noun or adjective that usually indicates lack of definiteness.

they refer to a collection of individuals.[9] Once the collective has been turned into a singulative, the output can be pluralized, as shown in the third column of (30).

(30) a. burtogaal 'oranges' ~ burtogaala(h) 'an orange' ~ burtogaalaat 'oranges'
       b. baqar 'cows' ~ baqara(h) 'a cow' ~ baqaraat 'cows'
       c. tamer 'dates' ~ tamra(h) 'a date' ~ tamraat 'dates'
       d. jammer 'embers' ~ jammra(h) 'an ember' ~ jammraat 'embers'
       e. šajar 'trees' ~ šajara(h) 'a tree' ~ šajaraat 'trees'
       f. naxal 'palm trees' ~ naxla(h) 'a palm tree' ~ naxlaat 'palm trees'
       g. beyedʕ 'eggs' ~ beydʕa(h) 'an egg' ~ beydʕaat 'eggs'
       h. waraq 'leaves' ~ waraqa(h) 'a leave' ~ waraqaat 'leaves'
       i. zabeeb 'raisins' ~ zabeba(h) 'a raisin' ~ zabebaat 'raisins'
       j. jazar 'carrots' ~ jazara(h) 'a carrot' ~ jazaraat 'carrots'

For sake of completeness, it must be noted that the singulative also targets mass nouns, as shown in (31), but I will not discuss these in any details, focusing on collectives (the semantics of mass nouns is slightly different from that of collectives). Suffice to say that singulativized mass nouns often refer to 'portions of' or 'chunks of'. Of course, singulativized mass nouns can be pluralized as shown in (31).

(31) a. ṭeen 'mud' ~ ṭeena(h) 'chunk of mud' ~ ṭeenaat 'chunks of mud'
       b. ramaad 'ash' ~ ramaada(h) 'amount of ash' ~ ramaadat 'amounts of ash'
       c. zubbd 'butter' ~ zubda(h) 'portion of butter' ~ zubdaat 'portions of butter'
       e. xamer 'wine' ~ xamra(h) 'portion of wine' ~ xamraat 'portions of wine'

In the traditional/descriptive literature on Arabic, it is fairly common for authors to describe collectives as referring to types. For example, Wright (1963: 147) writes that collectives refer to "the genus or whole" and other grammarians describe collectives as denoting "substances" or "collections of objects viewed as a totality" (Erwin 1963: 166), "a collective of things or animals regarded as a unit"/"a mass or a volume" (Talmoudi 1980: 132), or "a class or mass of things without counting the units that make up the mass" (Abdel-Massih et al. 1979: 49). For Harrell (1962: 78), the collective "denotes the species as a whole" and for Holes (1990: 149), it has "generic reference."

    Following Ojeda (1992) and Zabbal (2002), I propose that collectives denote kinds (in Carlson's 1977 sense). Collectives are weakly referential: they do not refer to uniquely identifiable entities, rather they are abstract objects, concepts, rather than concrete entities, which means also they are neutral as to whether they denote sums

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9.   In Classical Arabic, the tradition distinguishes two kinds of collectives: nouns of collections (applies to sentient beings), like 'herd' and 'company' and nouns of collective kinds. The latter applies to animals, plants and inanimate objects) and comprises many nouns denoting fruits, vegetables, flowers, grains, insects, and birds. These forms serve as the basis for the derivation of singulatives (unit nouns), which in turn can be pluralized.

or atoms. Evidence for the idea that collectives denote kinds comes from the fact that environments such as interrogatives, conditionals and negative constructions are all excellent environments for collectives. To illustrate, in order to ask a question such as *Do you have oranges?* in Arabic, a collective is preferred, as shown in (32). These judgements are for Standard Arabic and some dialects of Arabic, such as those found in Saudi Arabia and in the Egyptian Cairo dialect, among others. Because the collective is number neutral, the question in (32) can be answered inclusively: either by (32a) or by (32b) – see similar examples in Mifsud (1996) for Maltese (Examples (1), (2) and (3) p. 33) and also Corbett (2000:130, Footnote 48).

(32)   *hal ʕindik   burtogaal?*
       Q   have.you   oranges$_{COL}$
       'Do you have oranges?'

   a.   *na'ʕam, ʕindi   waḥida(h).*
        yes   have.I one$_{FEM}$
        'Yes, I have one orange."

   b.   *na'ʕam, ʕindi   thalaath.*
        yes   have.I three$_{FEM}$
        'Yes, I have three oranges.'

On the other hand, plurals of singulatives in interrogatives appear odd to speakers. This indicates that the plural version of the singulative does not denote a kind: it is not weakly referential. It is not referring to a class or a concept, but refers to individuals (only). The plural of a singulative is interpreted exclusively (*two or more*) and never inclusively (*one or more*); it calls attention to some individual parts or pieces, never to the concept or general substance. To illustrate, *burtogaalaat* 'oranges' in (33) is not neutral enough to be in an interrogative: the noun has been singulativized/individualized and then pluralized, thus no longer about the concept of oranges.

(33)   ʔ**hal ʕindik   burtogaalaat?*
       Q   have.you   oranges$_{FEM.PL}$
       'Do you have oranges?'

In the same vein, one would not ask (34), upon entering a shop, but (35). *Samak* 'fish' is the collective noun and thus natural in an environment that requires not specific fish but the concept/the class of fish ('fish stuff'). On the other hand, *samakaat* 'fish' is the plural of the singulative form of the noun: its presence in an interrogative is odd because the neutrality of the noun is not satisfied (*samak* 'collective' > *samaka(h)* 'singulative' > *samakaat* 'plural').

(34)   **ʕindik   samakaat?*
       have.you   fish$_{FEM.PL}$
       'Do you have fish?'

(35)   *ʕindik   samak?*
        have.you   fish
        'Do you have fish?'

Similarly, it would be odd for these speakers to use (36), with the plural of the singulative, in order to ask whether or not a man has hair. The collective must be used instead, as in (37) (*šaʕar* 'hair' > *šaʕra(h)* 'strand of hair' > *šaʕrat* 'strands of hair').

(36)   **ʕindah   šaʕraat?*
         has.he   hair$_{FEM.PL}$
        'Does he have strands of hair?'

(37)   *ʕindah   šaʕar?*
        has.he   hair$_{COL}$
        'Does he have hair?'

In continuation with the distribution of collective nouns in contexts that favour a kind reading, let me introduce conditional environments as in (38). As above, a collective is very natural in such an environment (38) while a singulativized plural is not (39).

(38)   * raʔja-an, itha ʕindik   burtogaal, ʔerfaʕ yedak.*
        please   if   have.you oranges$_{COL}$ raise hand.your
        'Please, if you have oranges, raise your hand.'

(39)   **raʔja-an, itha ʕindik   burtogaalaat, ʔirfaʕ yedak.*
         please   if   have.you oranges$_{FEM.PL}$ raise hand.your
        'Please, if you have oranges, raise your hand.'

We observe the same pattern in negative contexts. Compare (40) with (41). In (40) a collective is used and the sentence is grammatical while in (41) the plural of the singulative is used and the sentence is ill-formed.[10]

(40)   *ana ma ʔakalt burtogaal.*
        I   not ate.I orange$_{COL}$
        'I didn't eat oranges.'

(41)   **ana ma ʔakalt burtogaalaat.*
         I   not ate.I oranges$_{FEM.PL}$
        'I didn't eat oranges.'

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10.   This, I think, concurs with Grimm's (2012) results about Dagaare, an inverse number marking language. In a sentence such as (i), a collective must be used in which case the plural is interpreted inclusively.

(i)   *n   dà   bá   dà   bíè   (zàà)*
       1.PRO.SG NEG buy PST seed.PL (any)
       'I didn't buy (any) seeds.'
       (Grimm 2012:97)

If a collective noun in Arabic denotes a kind and is number neutral, it will be very natural in the restriction of a universal quantification, since it is a context where quantity is not important. This prediction is borne out as shown in (42). On the other hand, the plural of a singulative will not be natural in such an environment because it is not number neutral as illustrated in (43).

(42)   *kullu   dʕaifin   jab   burtogaalan,*
       every$_{NOM}$ guest$_{GEN}$ brought   orange$_{COL}$
       ħadʕar   ʔal-monasaba(h).
       attended   the party
       'Every guest who brought oranges came to the party.'

(43)   **kullu   dʕaifin   jab   burtogaalaat, ħadʕar   ʔal-monasaba(h).*
        every$_{NOM}$ guest$_{GEN}$ brought   oranges$_{FEM.PL}$ attended   the party
       'Every guest who brought oranges came to the party.'

In sum, the plurative in Arabic is not weakly referential. From that perspective, it resembles the plural of the plural. Broken plurals, as those described in Section 3, can indeed be pluralized (so-called plural of the plural or double plural). For example, *siwar* 'bracelet' has a broken plural, *ʔaswira(h)* 'bracelets' and a plural of that plural, *ʔasaawir* 'bracelets'. Broken plurals are often interpreted as ranging over groups. In that way, they are like collectives – for the similarities between the collectives and bare plurals, see Wright (1963). What is interesting for us is that the plural of the plural cannot be interpreted weakly/inclusively: it can only refer to a sum. The difference between the broken plural and the plural broken plural is that the former is interpreted as a group, a collection, whereas the second is interpreted as a sum of individuals.

(44)   *ʕindik   ʔaswira(h)?*   broken plural   weakly referential
       have-you   bracelet
       'Do you have bracelets?'

(45)   *ʕindik   ʔasaawir?*   plural of broken plural not weakly referential
       have-you   bracelet
       'Do you have bracelets?'

To return to collectives, although I have been discussing environments such as the restriction of quantifiers, conditionals, questions, etc. I do not want to give the impression that collectives are tied to these contexts. On the contrary, collectives are free to appear anywhere (even in upward monotone environments) provided that specific number is irrelevant to the sentence/utterance. Thus, for example, a collective in the scope of a universal quantifier is perfectly acceptable as shown by (46) and also in non-quantified environments such as (47).

(46)　*kullu*　　*dʕaifin*　*ħadʕar*　*ʔal-monasaba*(*h*),
　　　every_NOM　guest_GEN　attended　the-party

　　　jab　　*burtogaalan.*
　　　brought　orange_COL
　　　'Every guest who came to the party brought oranges.'

(47)　*ʔištareitu*　*burtogaalan.*
　　　bought.I　oranges_COL
　　　'I bought oranges.'

This is where collectives are different from plurals. Although collectives refer to sums, unlike plurals (English plurals, sound and broken plural in Arabic) they are not interpreted necessarily exclusively in upward monotone contexts or even inclusively in weakly referential contexts. In English, for example, if one says (48) then there appears to be an implicature that I bought more than one orange. This is not true for collectives. This is because they are kind-denoting.

(48)　I bought oranges.

Now that we have examined the interpretation of collectives and plurals of singulatives, let me turn to the issue of markedness and see how singulative systems compare from that point of view with more traditional singular/plural number marking systems (see Section 1).

From the discussion above, it appears that: (i) in a singulative language, the singulative is marked both morphologically and semantically; (ii) the plural of the singulative is also marked both morphologically and semantically; (iii) in a singulative language, a collective noun is unmarked both morphologically and semantically.

Consider the following tables as points of comparison with those presented above for English. The singulative appears twice: first, as a point of comparison with the plural and second, as a point of comparison with the collective.

Table 3. Singulative compared with plural

	Morphologically	Semantically
Singulative	Marked	Marked
Plural	Marked	Marked

Table 4. Singulative compared with collective

	Morphologically	Semantically
Collective	Unmarked	Unmarked
Singulative	Marked	Marked

While these involve a strict correspondence between morphological and semantic markedness and might thus be compatible with Farkas and de Swart's (2010) analysis, there are nevertheless many problems that point to the view that their analysis cannot be extended to singulative systems. In Section 2, we already saw that linking the distribution of weak and strong plurals to monotonicity is problematic. In the case of the singulative, it is not clear how an account based on inferences and competition can handle the facts in Table 3, since each point of potential comparison (the singulative versus the plural) is marked *both* morphologically and semantically. Accounts of the plural in English, on the other hand, rely very much on competition. For example, Sauerland et al. (2005) attribute the interpretation of the plural to be the result of competition of forms or alternates during the process of calculating the meaning, where the stronger interpretation wins. While the denotations of singular and plural nouns include both atoms and sums, the singular form additionally includes an atomicity presupposition. Assuming the principle of "maximize presupposition" (Heim 1991), they ensure that the form with the strongest presupposition is selected. Downward entailing contexts are claimed to reverse which interpretation is stronger. In this case, singulars are logically weaker than plurals. Maximize presupposition is not in effect since selecting the singular with its atomicity presupposition would not strengthen the entire utterance.

Competition is also very much at the heart of accounts such as those of Spector (2007) and Zweig (2009), since assuming an inclusive interpretation of the plural, they use scalar reasoning. The exclusive and inclusive interpretations form a scale: the exclusive is the stronger interpretation and must be selected according to standard pragmatic reasoning. In downward entailing contexts, the entailment patterns are reversed and the inclusive interpretation must be selected.

Farkas and de Swart's (2010) account also very much depends on competition. As mentioned in the introduction, on their view, there is no singular feature and no special semantics associated with singular forms while plural forms are assumed to involve a semantically potent plural feature. Plurals are polysemous between an exclusive plural sense, which enforces sum reference, and an inclusive sense, which allows both atoms and sums as possible witnesses. Invoking the Strongest Meaning Hypothesis, the authors propose that a plural form is pragmatically appropriate only in case sum values are among the intended referents. It is not possible to simply dismiss singulative systems and claim they are exceptions. After all, Farkas and de Swart (2010) integrate singulars in Hungarian that are unmarked semantically and morphologically although this is not after all a widespread option in Indo-European languages. To be fair, they do mention in a footnote (Footnote 3, p. 67) that there are exceptions to the patterns they describe, and in particular they mention singulative languages such as Welsh and point to a study in de Swart and Zwarts (2010) where reversals of markedness are addressed. However, the proposal is carried out in Optimality Theory and it

is not clear to me that it is consistent with the simple pattern of markedness described in Farkas and de Swart (2010).

In conclusion, what is interesting about the plural of a singulative is that it is not unmarked semantically, i.e. it is not interpreted inclusively, but always exclusively (such a plural can thus not be polysemous). The singulative, on the other hand, is interpreted as always referring to atoms. Table 5 provides a summary of the different interpretations that plurals as well as the collective receive in a singulative language such as Arabic.

Table 5. Different interpretations of collective and plurals in Arabic

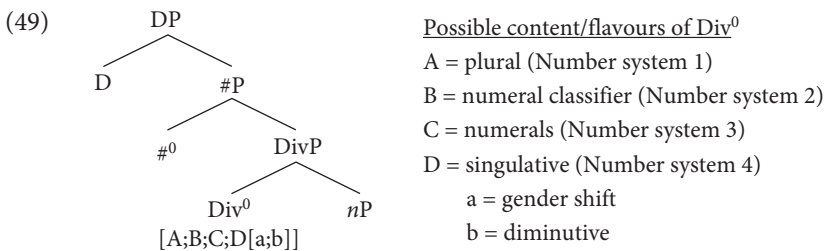|	Weakly referential
Collective	yes
Sound plural	yes
Broken plural	yes
Plural of singulative	no
Plural of broken plural	no

Finally, to reiterate the point about markedness and competition, it is not clear how these facts, and especially the problem of singulative plurals, can be explained within existing semantic accounts of the plural.

5.   The plural distributed

Let's take stock. The fact that plurals (sound and broken) in Standard Arabic are weakly referential (in the right contexts) fits well with Borer's (2005) analysis of the plural in English. This is because, as pointed out in the introduction, the plural does not, on her view, have a function of counting but rather that of classifying. It is thus expected that the plural in English should not necessarily refer to more than one, but can in certain cases refer to *one* only. In Borer's system, the plural is realized under a Division head (Div^0) and is in complementary distribution with classifiers, which are also generated under Div^0.

In Mathieu (2012b), I show that the degree to which the content of Div^0 varies is consequently higher than previously thought (see Ritter & Wiltschko 2009 for the idea that the content of functional categories can vary cross-linguistically). The plural, numeral classifiers, and atomizing numerals are all different flavours Div^0 can take, but we must add the singulative. The content of the singulative itself varies: for instance, in Ojibwe (an Algonquian language) it comes in the form of gender shift or in the form of

the diminutive. Cross-linguistically, gender shift comes in two sub-flavours: shift from masculine to feminine in Breton, Welsh, Somali and Arabic, but shift from inanimate to animate in Algonquian. (49) summarises the different flavours of Div^0 can take. Number system 1 corresponds to English, French, etc., Number system 2 corresponds to Chinese, Number system number 3 corresponds to Hungarian (where numerals can appear directly with nominal that morphologically look like singulars), Number system 4 corresponds to singulative languages. In some singulative languages, it is possible for the diminutive to be used as the dividing function (note that a language can potentially have more than one Number system available in its grammar – the dividing heads will be in complementary distribution).

(49)

DP
├── D
└── #P
    ├── $\#^0$
    └── DivP
        ├── Div^0
        │   [A;B;C;D[a;b]]
        └── nP

Possible content/flavours of Div^0
A = plural (Number system 1)
B = numeral classifier (Number system 2)
C = numerals (Number system 3)
D = singulative (Number system 4)
  a = gender shift
  b = diminutive

Since there is evidence that singulative forms can be pluralized (see Section 3) and that they are interpreted exclusively, my claim is that division is not the sole function of the plural (contra Borer 2005), but that it can also simply be used as a counter, as taken for granted by traditional grammars and common wisdom. Following Link (1983), plurals *can* refer to sums uniquely after all.

Following Borer (2005), I propose that the classifying plural surfaces under Div^0 (its function is to divide, to classify), but that the counting plural surfaces higher in the structure, i.e. under $\#^0$. We do not expect complementary distribution between cardinals and the counting plurals, because cardinals are in Spec-$\#^0$ (as in Borer 2005) and the counting plural appears under the head $\#^0$ (the counting plural is an affix). Once the singulative has been realized under Div^0 the counting plural can target that singulative. In Arabic, broken and sound plurals are both realized under Div^0. They are thus no different from the English plural, i.e. the classifying plural. Both are weakly referential. Finally, *n* is reserved for lexical/idiosyncratic/expressive plurals, many of which are introduced and discussed in Corbett (2000): the plural of modesty, the evasive plural, the emphatic plural, etc. These are not productive and are used idiosyncratically and expressively. An example of an idiosyncratic plural in English appears in (50).
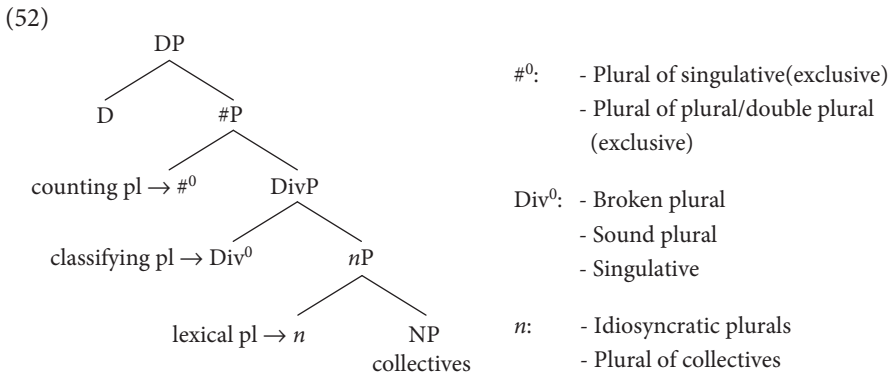
(50)   He's got the brains for this job.

Although *brains* is plural in this example, it does not refer to a sum, but to an atom.

Under *n* we also find the plural of collectives. In Arabic, for example, collectives can be pluralized directly without going through the Dividing function under Div^0. Some examples appear in (51). These plurals are sometimes called greater plurals or plurals of abundance. They imply an excessive number or else all possible instances of the referent. This plural is the one described for Halkomelem Salish (Wiltschko 2008).

(51) a. *samak* 'fish'   ~ *ʔasmaak* 'a lot of fish'
      b. *xayl*   'horses' ~ *xuyuul*   'a lot of horses'
      c. *tamar* 'dates' ~ *tamour*   'dates'

The diagram in (52) summarizes the different target positions that the plural can take. Distributing the plural along several heads on a syntactic spine is in the tradition of many researchers. A case in point is Ritter's (1991, 1993) proposal that, depending on the language, gender is encoded in *n* (N) or in Div (Num). Thus, it seems to me that, distributing number across different heads is only a natural proposal.

(52)

```
                DP
              /    \
             D      #P
                   /   \
   counting pl → #⁰    DivP
                      /    \
   classifying pl → Div⁰    nP
                          /    \
           lexical pl → n      NP
                            collectives
```

$\#^0$: - Plural of singulative(exclusive)
         - Plural of plural/double plural (exclusive)

Div^0: - Broken plural
         - Sound plural
         - Singulative

n: - Idiosyncratic plurals
         - Plural of collectives

My proposal is different from many accounts, since many researchers group singulatives, broken plurals, pluratives, double plurals, etc. as instances of *n* (Acquaviva 2008). On this view, there is only one productive plural and that is the classifying plural (Borer 2005). My contention is that there is another productive plural, i.e. the counting plural. The problem with many of the alternative proposals is that they are forced to treat *n* as a dividing head for the singulative (Acquaviva 2008). Thus, under their view, there are two dividing heads: *n* and Div^0. By Occam's razor, it is best to have only one dividing head. Since the singulative is fairly regular in the languages that have it and since its function is that of dividing, it is only natural to place it under Div^0. Also, if one places the regular singulative and its plural on the one hand together with lexical plurals under the same node *n*, one loses the major differences that exist between the first group and the second class. Also, it is not clear how one can explain that the singulative and its plural are definitely not in complementary distribution if they are placed under the same node. Finally, broken plurals are fairly

regular and semantically transparent. Thus, there is no motivation for placing them under *n*. My account is thus much more in line of that of Zabbal (2002) and that of Fassi Fehri (2003).

In sum, although one loses Borer's (2005) generalization that the plural is always a divider and never a counter, this option is nevertheless preferable over having two dividing heads. Also, it must be noted that the motivation behind my proposal is empirical; it is shown by the facts: the counting plural cannot be used as a kind (it is not number neutral or weakly referential), since it cannot be interpreted as meaning *one* as well as *more than one*. Instead, it strictly refers to *more than one*.

6.   Conclusion

The aim of the present paper was to contribute to the literature on plurals by accounting for plural forms in singulative languages. Focusing on Standard Arabic and certain dialects of Arabic, I argued that the plural comes in many guises and that a syntactic and semantic theory of the plural ought to take all of its incarnations into account. I presented a theory where there are three positions for the plural: *n* (lexical plural), Div^0 (classifying plural) and $\#^0$ (counting plural). I showed that while the classifying plural has an inclusive reading (the plural nominal is weakly referential), the counting plural has an exclusive reading (the plural nominal is not weakly referential). This indicates that the plural is not always semantically unmarked cross-linguistically. I also showed that while collectives are weakly referential (they are interpreted inclusively), the plural of collectives is not (it is interpreted exclusively). One main aspect of my proposal is that the singulative and sound/broken plurals in Arabic are classifying devices realized under Div^0. My account is thus in line with that of Zabbal (2002) and Fassi Fehri (2003) rather than with accounts such as Lecarme (2002), Kihm (2003), Acquaviva (2008), Kramer (2012), among others, since according to the latter the singulative, broken plurals, etc. are derivational in nature and are all realized lower in the structure (under *n*).

Acknowledgments

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