

Aspects of individuation*

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1 Introduction

The relation between classifiers and plural marking appears, in some respects, to be one of complementarity in both distribution and function. Languages that make extensive use of classifiers typically lack obligatory inflection for number, while languages with systematic number marking often lack classifiers. Both types of morphology are implicated

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in counting, as illustrated in (1):¹

- (1) a. *san* *(*ben*) *shu*
three CL book
'three books' (Mandarin; L. L.-S. Cheng & Sybesma, 1999: 514)
- b. three book*(-s)

In the Mandarin example in (1a), the presence of the numeral *san* requires the presence of a classifier, but there is no plural marking. In the English counterpart in (1b), plural marking is obligatory, and there is no classifier. This pattern is not universal: languages with classifiers may also have some form of plural marking, as we will see later in this paper, and some languages with plural marking (such as Hungarian) do not use it in combination with numerals. The purpose of this paper is to shed light on both the pattern and some of the exceptions (real and apparent) by proposing a formal representation of plurality and classification as two separate aspects of individuation, the semantic property that characterizes count nouns cross-linguistically. Drawing on data from English, Mandarin, Cantonese, Armenian, Korean, and Persian, we will show how the differences among these languages can be reduced to a small number of differences in which features the language makes use of, which of those features can project as syntactic heads, and the status of non-projecting features as modifiers or head features. Under our analysis, it is not necessary that a language be characterizable, as a whole, as a classifier

1. The following abbreviations are used:

ACC	accusative	DET	determiner	PL	plural
AGGLOM	agglomeration	EZ	<i>ezafe</i>	PROG	progressive
ANIM	animate	FEM	feminine	Q	interrogative
ASP	aspect	GEN	genitive	SG	singular
CL	classifier	IMP	imperative	TOP	topic
CONT	continuous	INDEF	indefinite	#	individuation (number)
CPL	copula	LOC	locative	π	person
DECL	declarative	NEG	negation	1	first person
DEF	definite	NOM	nominative	2	second person
DEM	demonstrative	PFV	perfective	3	third person

language or as a plural-marking language. Rather, classifiers and plural marking may coexist in a language as long as only one appears in any given nominal.

1.1 Theoretical Framework

We adopt a version of Distributed Morphology (Halle & Marantz, 1993) in which features are privative, and are organized into dependency trees as proposed by Harley (1994). In any system of privative features, the absence of a property is represented formally simply by the absence of the corresponding feature, rather than by the presence of a negative value. However, as has been pointed out for phonological features by Hall (2007) and Dresher (2009), the relative scope of contrasts is crucial to determining whether the absence of a feature is meaningful. If a feature is absent from a context in which it could not be present, then its absence is not contrastive. For example, in many languages the feature VOICE is not specified on sonorants—not because sonorants are voiceless, but rather because they are all voiced; because there is no voicing contrast in this domain, no feature marking is necessary, and the absence of the feature does not signify the absence of the corresponding property.

We also assume, following Wiltschko (2009), that morphosyntactic features can appear either as heads or as modifiers, and that this difference also has an effect on whether the absence of a feature is contrastive. If a feature is the head of a syntactic projection, or a morphosyntactic dependent of a head, then its absence is significant. For example, in the system of features proposed for English Infl by Cowper and Hall (1999), past tense is marked by a feature PRECEDENCE dependent on the Infl head; an IP that lacks PRECEDENCE is interpreted as contrastively non-past. A modifier feature, on the other hand, is like an adjunct, and its absence is non-contrastive. In Halkomelem, for example, Wiltschko (2009) argues that gender is a modifier feature on determiners: as shown in (2), the feminine determiner *the* can only be used with feminine nouns, but the unmarked determiner *te* is simply vague as to gender rather than contrastively non-feminine.

(2) Gender as a modifier feature on Halkomelem determiners (Wiltschko, 2009: 40)

- | | |
|--|--|
| a. * <i>Ílhtel the swíyeqe.</i>
eat DET.FEM man
Intended: ‘The man is eating.’ | c. <i>Ílhtel te swíyeqe.</i>
eat DET man
‘The man is eating.’ |
| b. <i>Ílhtel the slháli.</i>
eat DET.FEM woman
‘The woman is eating.’ | d. <i>Ílhtel te slháli.</i>
eat DET woman
‘The woman is eating.’ |

While Universal Grammar makes available a finite set of morphosyntactic features, there are a few ways that languages can differ parametrically in the use of these features. A feature may be used in one language, and entirely absent from another. If used in a particular language, a feature can appear either as a head feature or a modifier feature. Furthermore, the semantic dependencies encoded in feature geometries can be mapped to syntactic structure in different ways. If a feature F is semantically dependent on another feature G , then F can appear as morphosyntactic dependent of G on a single head, or F can be the head of a separate syntactic projection that selects a complement marked with G .

As a starting point, we assume that Universal Grammar makes available at least the following features relevant to the semantic field of individuation and number (Cowper, 2005b; Cowper & Hall, 2009):²

- (3) #: individuated
>1: plural
CL: classified

The feature # encodes individuation, and a nominal from which # is contrastively absent is interpreted as mass. Plural (>1) is semantically dependent on #, being interpretable only on count nominals. A count nominal from which >1 is contrastively

2. We set aside the fact that many languages distinguish duals from singular and plural, and that there are languages that also distinguish trials or paucals. See Cowper (2005b) for some discussion of such systems.

absent is interpreted as singular. What we will represent here as the feature CL is the morphosyntactic encoding of classification—a feature or class of features that specifies a unit of individuation. Like >1 , CL is semantically dependent on #, but it elaborates individuation along a different dimension. # itself quantizes a nominal; >1 further specifies the number of quanta; CL further specifies the type of quanta.

As stated above, the status of # as contrastive or non-contrastive depends on where in the syntactic structure the feature appears. If # heads a syntactic projection, then its absence is contrastive. If it appears as a modifier of another projection, then its absence is non-contrastive. As we will argue here, number features can occur on lexical noun heads, as modifiers on the Determiner head, or in the head of a separate inflectional projection, #P (originally proposed by Ritter, 1992). The crosslinguistic variation in the position of # is reminiscent of work on gender features by Ritter (1993), who argues that gender is on the lexical noun head in Hebrew, but on the inflectional number head in Romance. Clarke (in progress) makes a similar argument for aspectual features: the event–state distinction is made in the verb phrase in Inuktitut and Japanese, but in INFL in English (Cowper, 2005a) and Greek (Kyriakaki, 2006).

1.2 The Mass–Count Distinction

It has commonly been assumed (see, e.g., Chierchia, 1998, 2009; Gillon, 2009) that English makes a lexical distinction between mass nouns, such as *rice*, *water*, *mud*, and *furniture*, and count nouns like *cat*, *book*, *pea*, and *chair*. However, the classification is far from rigid. English count nouns can generally be used with a mass interpretation, and, conversely, English mass nouns can generally be used with a count interpretation. This has been accounted for by invoking semantic operations such as the Universal Grinder (Pelletier, 1975), which converts count nouns to mass nouns, and the Universal Sorter (Bunt, 1985), which converts mass nouns to count nouns. Interestingly, there are some nouns, such as *furniture*, that behave syntactically like mass nouns, but which cannot be

converted to count nouns by the Universal Sorter.

We will argue that in fact, the vast majority of English nouns are unspecified for the mass-count distinction, and that interpreting ‘mass’ nouns as count, or ‘count’ nouns as mass, involves not coercion from one category to the other, but rather the morphosyntactic filling in of features that are not specified on the nouns themselves. Partly in line with Borer (2005), we propose that these features originate in syntactic projections above N in the nominal phrase.

In contrast to English, Chinese has been argued (Chierchia, 1998) to have only mass nouns lexically. Since a numeral can appear in Chinese nominals only with a classifier, it has been proposed that it is the classifier that individuates the underlyingly mass noun so as to make it countable. However, L. L.-S. Cheng and Sybesma (1999) have shown that Chinese does indeed have a lexical mass/count contrast. Count nouns appear with classifiers, whereas mass nouns can be counted only if they appear with a different sort of element that they term a massifier. We follow this approach for Chinese, and extend it to English to account for exceptional nouns like *furniture*, which, we will argue, has a representation essentially the same as that of a Chinese count noun.

In the sections that follow, we will first show how our system of representations applies to English and Chinese, and then turn our attention to the question of complementarity between classification and number marking. Looking at cases in Armenian, Cantonese, Mandarin, Korean, and Persian, we will show that while >1 and CL may both be used in a single language, these two elaborations of # do not co-occur on a single nominal projection.

2 Taxonomy of English nouns

English has often been described as permitting ‘coercion’ between count and mass nominals. (See, e.g., Zwicky (2006, 2008) for an informal discussion.) Under this view, nouns may be underlyingly count or mass, but the Universal Grinder (Pelletier, 1975) can turn

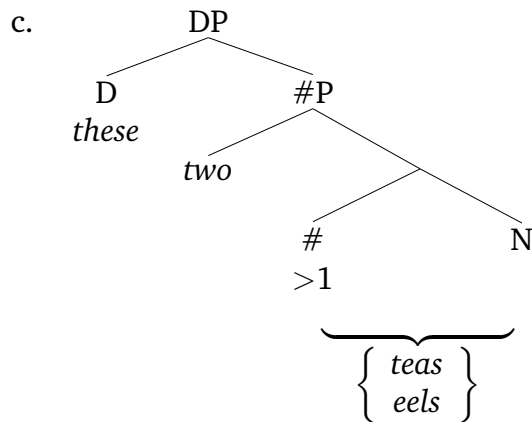
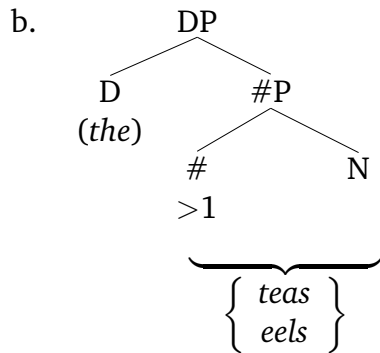
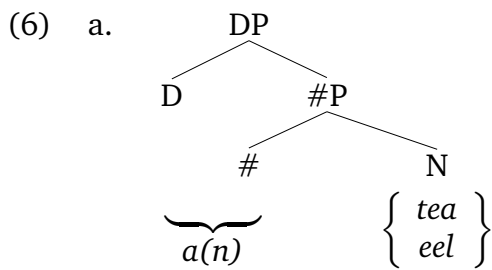
any count noun to mass, producing substance readings, and the Universal Sorter (Bunt, 1985) can make any mass noun countable, yielding interpretations that involve varieties, servings, or other quanta. Contrastive specification of the sort described in §1.1 permits a simpler account of these phenomena.

2.1 The regular pattern: *Eels and tea*

The behaviour of ordinary English nouns is illustrated in (4) and (5). Both a canonically mass noun such as *tea* and a canonically count noun such as *eel* receive count readings when they combine with numerals, the plural suffix, or the indefinite determiner *a(n)*, as in (4); they receive mass readings in contexts such as those in (5).

- (4) a. [DP The [#P teas]] of Sri Lanka are particularly nice.
b. I'd like [DP a [#P tea]], please.
c. I'd like [DP [#P one tea]], please.
d. I'd like [DP these [#P two teas]], please.
e. My hovercraft is full of [DP [#P eels]].
f. There is [DP an [#P eel]] in my hovercraft.
g. There is [DP [#P one eel]] in my hovercraft.
h. [DP These [#P two eels]] won't leave my hovercraft.
- (5) a. The cup was full of [DP [NP tea]].
b. There is [DP [NP eel]] all over my hovercraft.

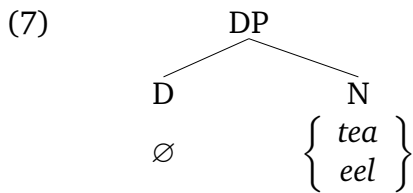
We propose that the nouns themselves are not inherently specified as grammatically mass or count, although their lexical semantics may make one reading seem intuitively more likely than the other. Rather, the interpretation of a noun as count or mass depends entirely on the presence or absence of the grammatical # head. The nominals in (4) have structures like those in (6):



In (6a), the vocabulary item $a(n)$ spells out the combination of unmarked (i.e., non-plural) # and unmarked (i.e., indefinite) D.³ In (6b) and (6c), a # head specified with >1 is realized by the plural suffix *-s*. We assume that numerals occupy the specifier position in #P, as in (6c); the presence of a numeral thus requires individuation.

The nominals in (5) have the structure shown in (7):

3. Here, we follow Cowper and Hall (2002), rather than assuming that $a(n)$ heads only a #P.



Here, the contrastive absence of the # projection gives rise to a mass interpretation.

Under this view, there is no featural distinction between nouns like *tea* and nouns like *eel*. They are equally capable of appearing in count and mass nominals, and no coercion is required in either case.

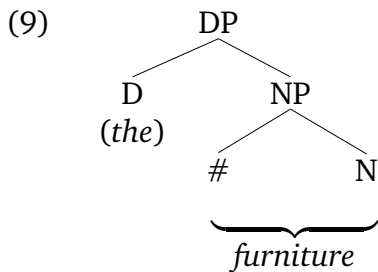
2.2 *Furniture, footwear, and equipment*

While most English nouns follow this pattern, and can thus be treated as unspecified for individuation, there are some nouns that behave differently. *Furniture*, for example, is sometimes described as a mass noun that cannot be coerced into a count reading—it can occur as a bare singular with an indefinite-quantity interpretation as in (8a), and it strenuously resists being combined with the indefinite determiner, the plural suffix, and numerals, as in (8b–8e). There are a few other English nouns, such as *footwear* or *equipment*, that share this pattern.

- (8)
- a. The room is full of furniture.
 - b. * I ordered a new furniture from Ikea. It has three knobs on the front.
 - c. * Of all the furnitures in the world, he had to pick Louis XV.
 - d. * I ordered three furniture(s) from Ikea.
 - e. * If there's one furniture I can't stand, it's Louis XV.

In our system, it is not possible to say that *furniture* is specified as mass in some way that cannot be overridden by coercion. For us, the mass interpretation arises from the contrastive absence of #, and the absence of # is not contrastive on English nouns, because # in English is the head of a projection higher than N. Instead, we propose that

the anomalous behaviour of *furniture*-class nouns is due to the **presence** of #; a nominal like *(the) furniture* has the structure shown in (9).



Furniture spells out a structure containing both # and N, in which N projects. In this structure, # is a modifier (*sensu* Wiltschko, 2009), rather than a separate syntactic head as in (6).

The presence of # on N reflects the semantic fact that *furniture*, *footwear*, and *equipment* are inherently individuated—they denote a set of individuated items, with the cancellable implicature that the set is non-singleton.⁴ Syntactically, the presence of the bare # feature both precludes the possibility of combining such a noun with a separate # projection, ruling out expressions like **furnitures*, **a furniture*, and **three furniture(s)*, and forces singular agreement (*The furniture is numerous and varied* rather than **The furniture are numerous and varied*).

2.3 Cattle and livestock

The existence of nouns that spell out bare # suggests that we might also find nouns realizing # and its dependent feature >1 . Such nouns should also not combine with *a(n)*

4. While the normal interpretation of (1a) is that the room contains more than one article of furniture, the exchange in (1b) is perfectly well-formed.

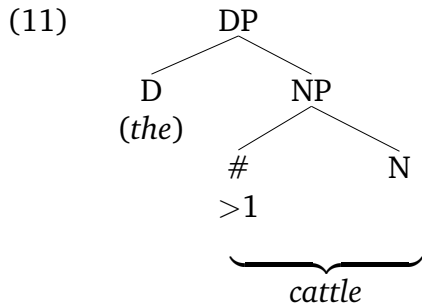
- (1) a. We put the furniture in the living room.
 b. Q: Is there furniture in the living room?
 A: Yes, there's a sofa.

See Doetjes (1996: 48–9) for a discussion of this type of noun, which she terms a “mass group.”

or -s, but they should consistently trigger plural agreement. English does indeed have a small number of such nouns that conform to this expected pattern; one example is *cattle*, as illustrated in (10).

- (10) a. Cattle are grazing in the meadow.
 b. *Cattle is grazing in the meadow.
 c. *A cattle is grazing in the meadow.
 d. *Cattles are grazing in the meadow.

A nominal such as *the cattle* has the structure in (11):



As in (9), the presence of # on the noun in (11) encodes its inherent individuation, and makes it semantically ineligible to combine with a separate # head.

While the bundling of # with N as in *furniture* and *cattle* occurs in English only on a few exceptional lexical items, this pattern is more prevalent in other languages.

3 Chinese

3.1 Count nouns and classifiers

We assume that Chinese nouns are lexically categorized as mass or count, as argued by L. L.-S. Cheng and Sybesma (1999). However, Chinese count nouns cannot actually be counted without a classifier, as shown in (12), repeated from (1a).

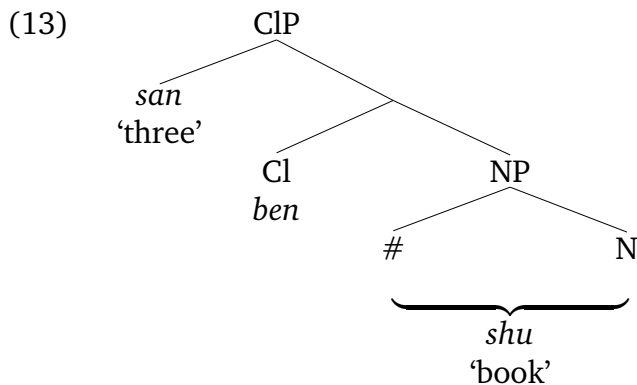
(12) Mandarin (L. L.-S. Cheng & Sybesma, 1999: 514)

a. *san ben shu*
three CL book
'three books'

b. **san shu*

We propose that count nouns in Chinese are structured like *furniture*-class nouns in English.⁵ They bear the feature # as a lexical property, and it is N, not #, that projects. (12b) is thus ungrammatical for the same reason that **one furniture* is ungrammatical in English: there is no projection in the nominal phrase whose specifier can host the numeral.

According to L. L.-S. Cheng and Sybesma (1999: 515), classifiers “name the unit in which the entity denoted by the noun naturally occurs.” We implement this with the structure in (13).



We take Cl to be a feature that elaborates individuation. Essentially, L. L.-S. Cheng and Sybesma’s insight is captured by saying that Cl in Chinese is a syntactic head that projects independently, but is semantically dependent on #. The effect of merging the Classifier head with a count noun like *shu* is thus to create an individuated nominal projection analogous to the English #P. We assume that numerals appear in the specifier of ClP in Chinese, in parallel to their position in English in the specifier of #P. One salient

5. Doetjes (1996) makes essentially this proposal, though she does not provide a formal representation.

difference between the Chinese ClP and the English #P is that ClP usually has a specifier, while #P frequently does not.⁶

3.2 Mass nouns and massifiers

Chinese mass nouns cannot appear with ordinary classifiers. Instead, they appear with what L. L.-S. Cheng and Sybesma (1999) call “mass classifiers,” or “massifiers,” as shown in (14). Count nouns can also appear with massifiers, as shown in (15).

- (14) a. *san ping jiu*
three CL-bottle liquor
‘three bottles of liquor’
- b. *san ba mi*
three CL-handful rice
‘three handfuls of rice’
- c. *san wan tang*
three CL-bowl soup
‘three bowls of soup’

- (15) *liang xiang shu*
two CL-box book
‘two boxes of books’

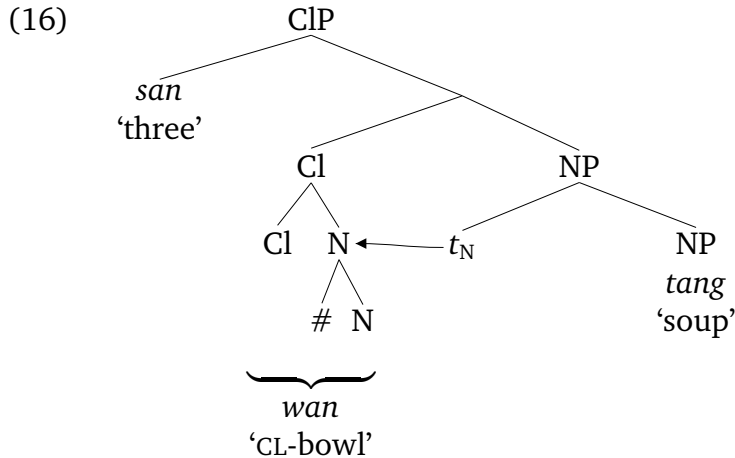
Unlike the classifiers discussed above, which merely name the unit of an already-individuated entity, massifiers both individuate the NP they apply to and name the unit of individuation. The unit frequently corresponds to a container or measure, as in the examples in (14) and (15). In addition, massifiers can be counted without adding another

6. In Cantonese, and to a slightly more limited extent in Mandarin, as discussed by L. L.-S. Cheng and Sybesma (2005), a nominal can consist of only a classifier followed by a noun, as shown in (1).

- (1) *Go siupangjau fan gan gaau.*
CL child sleep ASP nap
‘The child is having a nap.’ (Cantonese, V. M. T. Cheng, 2008)

classifier. They thus resemble Chinese count nouns in that they contribute the feature # and describe an entity, and also resemble classifiers in that they can combine directly with numerals.

L. L.-S. Cheng and Sybesma (1998) argue that massifiers are nouns that move from N to Cl within ClP. For us, this gives the structure in (16).



4 Plurality and classifiers

We have proposed that both >1 and CL are semantic dependents of #. However, it has been widely observed that languages that use classifiers seem not to use the singular-plural distinction, and vice versa. Ideally, this pattern should follow automatically from the representations of plurality and classification.

We propose that plurality and classification are different dimensions of individuation, just as location, time, and person are different dimensions of deixis. Ritter and Wiltschko (2005) argue that deictic anchoring of the clause is the core function of INFL, and that languages can differ as to whether that anchoring is temporal, spatial, or personal. They show that Blackfoot anchors clauses using personal deixis, and Halkomelem uses spatial deixis, while English uses the more well-known temporal deixis. Louie (2008) explores in detail the consequences of this difference for the representation of events and aspect in Blackfoot.

Returning to individuation, we can see the difference between English and Mandarin nominals as analogous to the difference between the INFLs of Blackfoot, English, and Halkomelem. English elaborates individuation using plurality, while Mandarin elaborates it using classification.

It is an empirical question whether the two ways of elaborating # are mutually exclusive, and whether any complementarity between them holds of an entire language, or only of a given nominal. In principle, it might be that languages can be classified as to whether they make use of classifiers or plurality, or it could be that nominals in a single language are divided into those with plurality and those with classifiers.

In the literature, languages with classifiers are often described as lacking “number.” From the data presented in the previous section, it seems that Mandarin does not make use of the grammatical feature >1 (although of course it has words that lexically express particular numbers of entities), and English does not appear to make use of CL (although it has words that lexically express various kinds of units). Do any languages combine the two?

Armenian is reported to have both a classifier and an inflectional plural suffix, as illustrated in (17). The Armenian data are from Borer (2005: 94–95).

- (17) a. *Yergu had hovanoc uni-m.*
two CL umbrella have-1SG
'I have two umbrellas.'
- b. *Yergu hovanoc-ner uni-m.*
two umbrella-PL have-1SG
'I have two umbrellas.'

These two forms of individuation, however, apparently cannot be combined:

- (18) **Yergu had hovanoc-ner uni-m.*
two CL umbrella-PL have-1SG
'I have two umbrellas.'

This suggests that while a single language may make use of both CL and >1 , a single nominal cannot. We now turn to a selection of cases where classifiers and plural marking

have been proposed to co-occur within a single language and, more interestingly, within a single nominal. In each case we will see that a single instance of individuation (#) cannot be elaborated simultaneously by dependent features of plurality and classification.

5 Plural marking in Chinese?

5.1 Cantonese *di*

A potential objection to the hypothesis that CL and >1 cannot co-occur is based on the Cantonese classifier *di*. *Di* is often described as marking plurality, and is incompatible with a singular reading in some contexts. For example, L. L.-S. Cheng (2009) notes that in (19), “it is necessarily more than one sweater”:

- (19) *Wufei di laangsaam*
Wufei CL sweater
‘Wufei’s sweaters’ (L. L.-S. Cheng, 2009)

However, *di* displays other characteristics that are less consistent with the notion that it spells out >1 . It can be used with mass nouns without imposing a count interpretation, as in (20), and it cannot combine with numerals greater than one, as shown in (21).

- (20) *jat di seoi*
one CL water
‘some water’ (L. L.-S. Cheng, 2009)

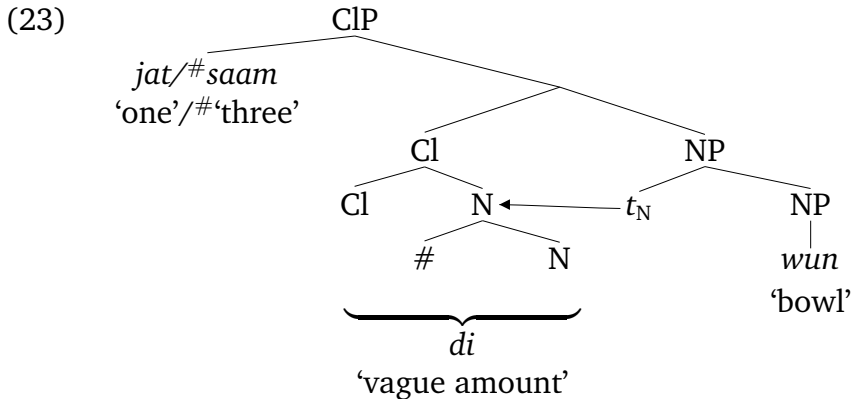
- (21) a. *Ngo mai zo jat di wun.*
I buy PFV one CL bowl
‘I have bought a number of bowls’ (Au-Yeung, 2007).
b. **Ngo mai zo saam di wun.*
I buy PFV three CL bowl
≈ ‘I have bought three numbers of bowls’ (Au-Yeung, 2007).

This contrasts sharply with the English plural, which, as illustrated in (22), entails individuation and is compatible with numerals greater than one.

(22) There were two coffees, a tea, and five waters left on the table.

Au-Yeung (2007: 4) notes that *di* encodes a “fuzzy” expression of quantity and has “a non-collective property that prohibits its countability. This property unspecifies how the referents denoted by the noun phrase group together and the grouping does not provide a shape or unit for counting.” We conclude that *di* is a massifier, and that it does not encode plurality. Rather, it indicates a very non-specific unit of individuation, one that is compatible with mass and count nouns alike, but that is not concrete enough to permit enumeration.

The nominals in (21) thus have the structure in (23). There is no syntactic impediment to inserting a numeral other than *one* in the ClP specifier position; the problem is semantic incompatibility between the vagueness of the unit specified by *di* and numerals greater than one.



5.2 Mandarin *-men*

Another potential example of >1 in a classifier language is the Mandarin morpheme *-men*, which looks very much like a plural suffix. It appears on pronouns, as in (24), and also on nouns, as in (25).

(24) Mandarin pronoun paradigm:

wo 'I' *women* 'we'
ni 'you (sg.)' *nimen* 'you (pl.)'
ta 'he/she' *tamen* 'they'

(25) *Wo qu zhao haizi-men.*
I go find child-men
'I will go find the children.'

However, the distribution and interpretation of *-men* suggest that it is not an ordinary plural marker. It appears only on nominals referring to animate, and usually human, beings, such as those in (26):

(26) (from C. N. Li & Thompson, 1989)

- a. *laoshi-men* 'teachers'
- b. *xuesheng-men* 'students'
- c. *pengyou-men* 'friends'
- d. *xiongdi-men* 'brothers'
- e. *jiemei-men* 'sisters'

While the absence of *-men* on pronouns is contrastive, its absence on nouns is not. Whereas the pronoun *wo* in (24) is singular, rather than neutral as to number, the noun *haizi* in (27) is simply unspecified for plurality.

(27) *Wo qu zhao haizi.*
I go find child
'I will go find {the/some} {child/children}.'

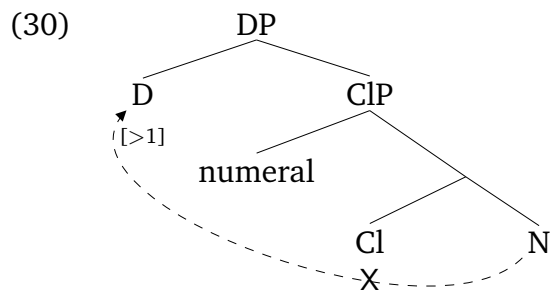
Furthermore, *-men* is incompatible with numerals (and with classifiers), as illustrated by the ungrammaticality of (28).

(28) **san ge xuesheng-men*
three CL student-men
Intended: 'three students'

Finally, the semantic contribution of *-men* appears to include more than just plurality. As pointed out by Y.-h. A. Li (1999), a nominal with *-men* is always interpreted as definite. Thus, *-men* cannot be used, for example, in existential constructions like the ones in (29).

- (29) a. *You ren.*
 have person
 ‘There is/are some person(s).’
- c. *Mei you ren.*
 not have person
 ‘There is nobody.’
- b. **You ren-men.*
 have person-*men*
- d. **Mei you ren-men.*
 not have person-*men*

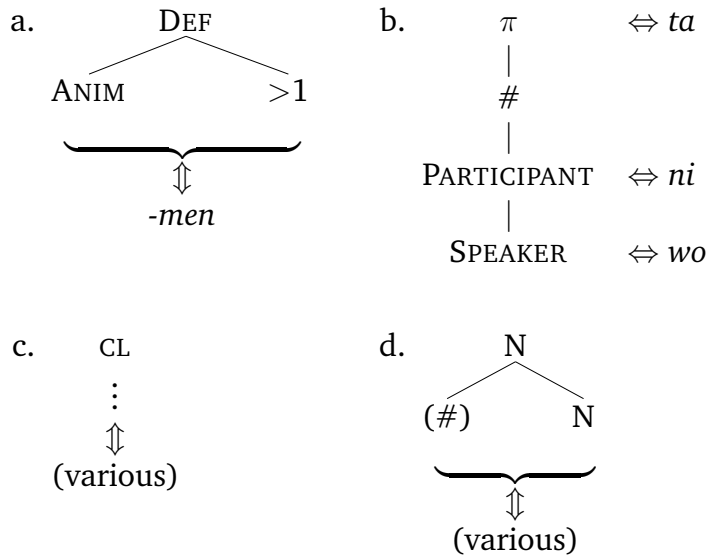
Y.-h. A. Li (1999) argues that *-men* surfaces in D, not in #. She proposes that nouns can be marked with *-men* only if they move to D, and that the movement of N to D is blocked by an intervening classifier. While we do not adopt Y.-h. A. Li’s analysis in its entirety, we concur with her proposal that *-men* is associated with D, and that the presence of a classifier blocks movement of N to D, as shown in (30).⁷



Using Y.-h. A. Li’s analysis as a starting point, we propose that in Mandarin, the features DEF(INITE), PERSON (π), CL, and N can be syntactic heads. These features are shown in (31), with their dependent features and the vocabulary items that realize them. Our DefP corresponds to Y.-h. A. Li’s DP.

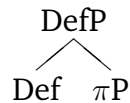
7. Y.-h. A. Li proposes an analysis that unifies the underlying representation of plurality in Chinese and English, so that both languages have a Number projection, while only Chinese has a Classifier projection. For us, while both languages make use of the feature #, this feature does not have the same syntactic status in the two languages.

(31) Heads, features, and vocabulary items:



As shown in (31a), the suffix *-men* spells out a DEF head with dependent features ANIM(ATE) and >1. Any nominal marked with *-men* will therefore be interpreted as animate, definite, and plural. The vocabulary items *ta*, *ni*, and *wo* spell out features at different levels in the person dependency structure in (31b): *wo* realizes SPEAKER, *ni* is used for non-speaker discourse participants, and *ta* is used for non-participants. Mandarin pronouns have the structure shown in (32), in which a DEF head takes a π P complement. If DEF is specified with both ANIM and >1, then *-men* is inserted; otherwise, the DEF head is not overtly realized.

(32) Structure:



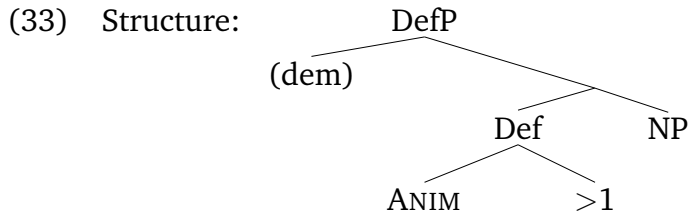
Examples:

<i>ta</i>	'he/she/it' / 'they' (inan.)
<i>ta-men</i>	'they' (anim.)
<i>wo</i>	'I'
<i>wo-men</i>	'we'

The proposal that *-men* spells out both ANIMATE and >1 correctly predicts an interesting quirk in the distribution of third-person pronouns: while *ta* 'he/she/it' can be used

to refer to both animate and inanimate objects, *tamen* ‘they’ is used only for animates (Ng, 1997). For plural inanimates, *ta*, not *tamen*, is used. Citing Chao (1968), Ng (1997: 8) says that “this non-use of *tamen* for inanimate things is the reason why a Chinese student of English will say *These pears have spoiled; better throw it away.*”

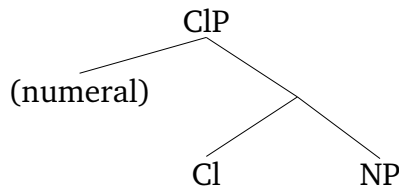
When *-men* appears with a lexical noun, the structure is as shown in (33). The plural feature on DEF selects a count noun, since >1 is semantically dependent on #.



Examples: *haizi-men* ‘the children’
na-xie xuesheng-men ‘those students’

For completeness, the structure we propose for classifier phrases is shown in (34).

(34) Structure:



Examples:
san ge haizi ‘(the) three children’
san ba mi ‘(the) three handfuls of rice’

While a DefP with no number feature can co-occur with CIP in Chinese, as in (35), a DefP containing the feature >1 cannot, as illustrated in (28), repeated below in (36).

(35) [_{DefP} *na* [_{CIP} *san ben* [_{NP} *shu*]]]
 DEM three CL book
 ‘those three books’ (adapted from Yang, 2005: 52)

- (36) * [_{DefP} [_{CIP} *san ge* [_{NP} *xuesheng*]] -*men*]
 three CL student -*men*
 Intended: ‘the three students’

It thus appears that the Chinese data are consistent with the hypothesis that that while a single language may indeed have both plural marking and numeral classifiers, a given nominal projection will have at most one of the two. In the next two sections, we consider some possible counterexamples in Korean and Persian.

6 Apparent plural marking in Korean

Kim (2005) claims that in Korean, plural marking can co-occur with a classifier in a single nominal, as shown in (37).

- (37) Korean:
 sey myeng-uy haksayng-tul
 three CL-GEN student-PL
 ‘three (specific) students’ (Kim, 2005)

However, there is considerable evidence that the Korean “plural marker” *-tul* is not, in fact, a true plural marker.

First, *-tul* is not obligatory in nominals with plural reference. A bare nominal can be interpreted as either singular or plural, as in (38). The interpretation of *haksayng-i* ‘student’ as singular or plural depends entirely on the context.

- (38) a. *Haksayng-i wudongcang-ey moyko-iss-ta.*
 student-NOM playground-LOC gather-PROG-DECL
 ‘Students are gathering at the playground.’
 b. *Haksayng-i wudongcang-eyse taliko-iss-ta.*
 student-NOM playground-LOC run-PROG-DECL
 ‘A student is running at the playground.’ (Kim, 2005)

Second, *-tul* can appear on non-nominal constituents, as shown in (39).

- (39) a. *Haksayng-tul-i wundongcang-eyse-tul yelsimhi taliko-iss-ta.*
 student-*tul*-NOM playground-LOC-*tul* hard run-PROG-DECL
 ‘Students are running hard at the playground.’ (Kim, 2005)
- b. *Nohi-tul oso-tul tul-o-tul w-a sul han can-tul ha-ko-tul ka.*
 you-*tul* quickly-*tul* enter-*tul* and wine one glass-*tul* drink-and-*tul* go
 ‘You come in quickly and drink a glass of wine and go.’ (Lee, 2000)

Of particular interest is the fact that *-tul* appears on the noun *can* ‘glass’, in the nominal *sul han can-tul* ‘one glass of wine’, without causing a contradiction. If *-tul* were an ordinary plural marker, it should be incompatible with ‘one.’

Indeed, Park (2008) has argued that *-tul* is not a plural marker, but rather a distributivity marker, whose meaning is similar to floated *all* in English. It can appear with distributed predicates, and also with those collective predicates that have distributive sub-entailments. When a collective predicate has a distributive sub-entailment, every participant has the property of taking part in the action denoted by the predicate (Dowty, 1987).

In (40), the individual members of the group denoted by the subject cannot be interpreted as taking part in ‘being a very big group’; only the collective can. *-Tul* is therefore disallowed, and (40b) is ungrammatical.

- (40) a. *Wuli-nun acwu khun tanchey-ita.*
 we-TOP very big group-CPL.DECL
 ‘We are a very big group.’ (Park, 2008: 283)
- b. **Wuli-tul-un acwu khun tanchey-ita.*
 we-*tul*-TOP very big group-CPL.DECL
 Intended: ‘We are (all) a very big group.’ (Park, 2008: 283)

In contrast, the predicate *twule* ‘surround’ does have a distributive sub-entailment, and *-tul* is possible, as shown in (41).

- (41) *Haksayng-tul-i sensayngnim-ul twule-ssassta.*
 student-*tul*-NOM teacher-ACC surround.PAST.DECL
 ‘The students (all) surrounded a teacher.’ (Park, 2008: 283)

Some predicates, such as ‘carry a box,’ may be interpreted either distributively, or collectively with a distributive sub-entailment. In Korean, *-tul* is compatible with both readings of such a predicate, and a sentence like (42) is therefore ambiguous.

- (42) *Haksayng-tul-i sangca-lul wunpanhayessta.*
 student-*tul*-NOM box-ACC carry.PAST.DECL
 ‘The students (all) carried a box.’ OR ‘Each student carried a box.’ (Park, 2008: 286)

Still other predicates, such as ‘be too heavy to carry,’ can be interpreted either distributively or collectively, but the collective interpretation lacks distributive sub-entailment. In Korean, such predicates are disambiguated by *tul*, which is compatible only with the distributive reading, as shown in (43).

- (43) *I kapang-tul-un naluke-ey nemu mukepta.*
 this bag-*tul*-TOP carry-to too heavy.DECL
 ‘These bags are (all) too heavy to carry.’ (Park, 2008: 287)

Park (2008) also argues that *-tul* appears in D/Q, higher than the Number or Classifier projections, and that it behaves like a strong determiner. A predicate nominal such as the one in (44) cannot be marked with *-tul*, and a *-tul*-marked nominal must take scope over negation, as in (45), and over the question operator, as in (46).

- (44) *Wuli-nun haksayng(*-tul)-ita.*
 we-TOP student-*tul*-CPL.DECL
 ‘We are students.’

- (45) a. *I kos-ey sensayngnim-un an kyesita.*
 this place-LOC teacher-TOP NEG exist.DECL
 ‘There is/are no teacher(s) in this place.’ OR ‘The teacher is not in this place.’

- b. *I kos-ey sensayngnim-tul-un an kyesita.*
 this place-LOC teacher-*tul*-TOP NEG exist.DECL
 ‘The teachers are not in this place.’ NOT ‘There are no teachers in this place.’

- (46) a. *I kos-ey sensayngnim-i kyesieyo?*
 this place-LOC teacher-NOM exist.Q
 ‘Is/are there a teacher/teachers in this place?’ OR ‘Is the teacher in this place?’

- b. *I kos-ey sensayngnim-tul-i kyesieyo?*
 this place-LOC teacher-*tul*-NOM exist.Q
 ‘Are the teachers in this place?’ NOT ‘Are there teachers in this place?’

We conclude, following Park (2008), that Korean *-tul* is not a plural marker elaborating individuation. It is a type of distributivity marker, and can appear on non-nominal elements. When it appears in a nominal, it is part of the D system, not part of the number/individuation system. Korean is thus consistent with the proposal that classification and plurality are mutually incompatible elaborations of individuation.

7 Individuation in Persian

Ghomeshi (2003) and Gebhardt (2009) claim that nominals in Persian can contain both a classifier and a plural marker, as in (47):⁸

(47) Persian:

se ta gorbe-ha
three CL cat-PL
'the three cats'

However, the Persian morpheme *ta*, glossed in (47) as a classifier, is crucially different from classifiers of the sort we have seen in Chinese, and the suffix *-ha*, glossed as plural, is not consistently associated with plural count nominals.

7.1 *Ta*: Not quite a classifier

The principal difference between Persian *ta* and classifiers in languages like Chinese is that *ta* does not actually classify: it is compatible with all nouns, and does not appear to indicate any specific unit of individuation. With canonically mass nouns such as *čaj* ('tea'), as in (48b), it produces a count interpretation, just as expressions like *a tea* or *three teas* do in English. *Ta* can also appear without an overt noun in anaphoric contexts such as the response in (48c).

8. Except where otherwise noted, all Persian data are from Gebhardt (2009).

- (48) a. *do ta deræxt*
two *ta* tree
'two trees'
- b. *Se ta čai, lotfæn.*
three *ta* tea please
'Three teas, please.'
- c. Q: *Čænd ta ænar xærid-i?*
how-many *ta* pomegranate bought-2SG
'How many pomegranates did you buy?'
- A: *Do ta xærid-æm.*
two *ta* bought-1SG
'I bought two.'

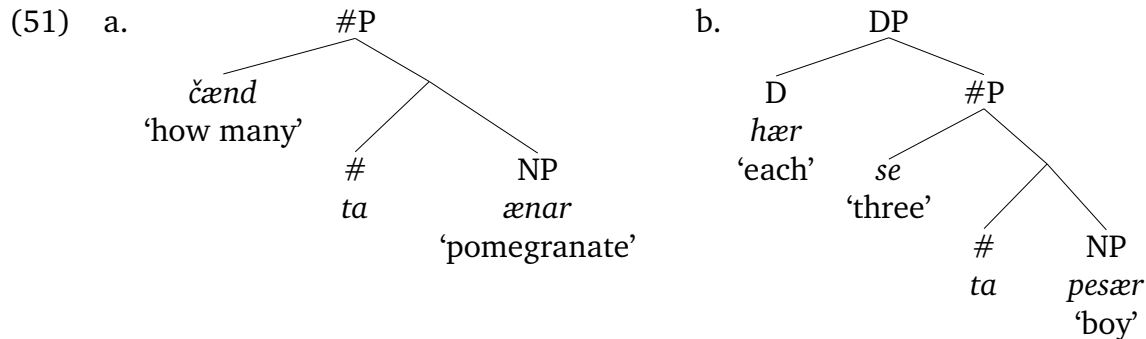
Ta must be preceded by an expression of quantity—either a numeral, as in (49), or the interrogative/existential quantifier *čænd*, as (50).⁹

- (49) a. **(se) ta pesær*
three *ta* boy
'three boys'
- b. *hær *(se) ta pesær*
each three *ta* boy
'all three boys'
- (50) a. *Čænd ta ænar xærid-i?*
how-many *ta* pomegranate bought-2SG
'How many pomegranates did you buy?'
- b. *Čænd ta muš tuye zirzæmin hæst.*
some *ta* mouse in basement is
'Some mice are in the basement.'

We propose that *ta* spells out a # head that obligatorily takes either *čænd* or a numeral as a specifier, as in the structures shown in (51). Under this analysis, *ta* encodes the grammatical property of individuation itself. *Ta* thus differs from Chinese count classifiers both in that it does not specify a particular unit of individuation and in that it

9. While Gebhardt (2009) treats *čændta* as a single element, Ghomeshi (2003) treats it as *čænd+ta*. We follow Ghomeshi, and assume that *čænd ta* is composed of a quantifier plus *ta*.

does not require its complement to be already individuated. Rather than exhibiting a mass–count contrast like the one in Chinese, Persian nouns, like most English nouns, are unspecified as to individuation, and so *ta*, like the English indefinite article and plural suffix, can ‘coerce’ a count reading of a canonically mass noun.



Because nominals lacking *ta* may also be interpreted as count, as illustrated in (52), we infer that Persian also has a phonologically null vocabulary item that can spell out #.

- (52) *Mina sib xord.*
 Mina apple ate.3SG
 ‘Mina ate apple/an apple/some apples/apples.’

Since *ta* requires a specifier, the head of a # projection that lacks a numeral (or *čænd*) will always be null. When a specifier is present, some speakers always use *ta*, which is expected under the principle that more highly specified vocabulary items block less highly specified ones. For other speakers, *ta* is optional, being preferred in the spoken register but not the written one.

- (53) *se %ta ostad*
 three *ta* professor
 ‘three professors’

For speakers who omit *ta* in writing, we can say that *ta* is further specified with a spoken register feature. This specification makes it incompatible with written contexts, thus allowing the null vocabulary item to spell out # instead. (See Cowper and Hall (2003) for a more detailed discussion of the role of register features in vocabulary insertion.)

7.2 *-Ha*: Not quite a plural marker

If *ta* spells out # rather than CL, then that fact by itself suffices to eliminate expressions such as (47) as instances in which a classifier and a plural marker appear in a single nominal. But if *-ha* really is a plural marker, then its co-occurrence with *ta* would still be surprising. In English, the presence of the suffix *-s*, which spells out >1, precludes the insertion of *a(n)*, which spells out # and (indefinite) D:

- (54) a. * a cats
b. * three a cats
c. * a three cats

Cowper and Hall (2002) propose that it is not possible to insert vocabulary items separately spelling out both a dependent feature and a superordinate feature in the same hierarchy. If *ta* realizes # and *-ha* realizes the dependent feature >1, we would wrongly expect that *-ha* should block *ta*.

However, there is reason to believe that what *-ha* spells out is not, in fact, >1. First, unlike the English plural suffix, and like Mandarin *-men* and Korean *-tul*, Persian *-ha* is not obligatory on plural nouns; nominals without *-ha* can be interpreted as plural in an appropriate context:

- (55) a. *Muš tuye zirzæmin hæst.*
mouse in basement is
'There are mice/there's a mouse in the basement.'
- b. *Mina sib xord.*
Mina apple ate.3SG
'Mina ate apple/an apple/some apples/apples.'

Canonically mass nouns such as 'sugar' and 'rice' may receive various individuated interpretations when they appear with *-ha*, as illustrated in (56).

- (56) a. *qænd-ha*
sugar-*ha*
'kinds/packets of sugar'

- b. *Berenj-a-ro invar-o unvar næ-paš.*
 rice-*ha-ra* here-and there NEG-throw.IMP
 ‘Don’t throw the (grains of) rice all over the place.’

However, adding *-ha* to a mass noun does not always force an individuated interpretation, as can be seen in (57), from Ghaniabadi (2009).

- (57) a. *Ab-a qæt'-e.*
 water-*ha* cut-is.3SG
 ‘The water is shut off.’
- b. *Bærf-a ab=šod.*
 snow-*ha* water=became.3SG
 ‘The snow melted.’
- c. *Ru mase-ha či nevešt-i?*
 on sand-*ha* what wrote-2SG
 ‘What did you write on the sand?’
- d. *Pa-m ru yæx-a liz=xord o oftad-æm o dæst-æm dær=ræft.*
 foot-1SG on ice-*ha* slippery=ate.3SG and fell-1SG and hand-1SG door=went.3SG
 ‘My foot slipped on the ice and I fell down and my hand got dislocated.’

One of our consultants notes that when *-ha* is used with mass nouns in this way, the nominal is interpreted as involving a large amount of whatever the noun denotes. For example, (57d) would be infelicitous if there were only a small patch of ice the size of a notebook. In that case *-ha* would be replaced by *-e*, which is normally used, in casual speech, for singular definite nominals.

We therefore propose that what *-ha* spells out is not specifically plurality, which entails individuation, but rather a more general property which can be understood, at least approximately, as ‘agglomeration’ (or AGGLOM for short).¹⁰ When it appears in combination with #, AGGLOM produces an interpretation that is effectively equivalent

10. We choose this term as a means of expressing the notion of an augmented or non-minimal assemblage while remaining deliberately vague as to whether it is a mass or a group; the *Oxford English Dictionary*’s definition of *agglomeration* includes both “a mass formed by mere mechanical union or approximation” and “a clustering or cluster.”

to a plural. Unlike >1, however, AGGLOM is not dependent on #, and when it appears without #, the result is understood as referring to a relatively large mass.

Another respect in which *-ha* is different from a regular plural marker—and similar to Mandarin *-men*—is that it appears to encode definiteness. Thus (58) cannot be interpreted as existential; (59) has only an equative reading; and in (60) the suffix *-ra*, which is obligatory on definite direct objects, cannot be omitted.

(58) *Muš-ha tuye zirzæmin hæst-ænd.*
 mouse-*ha* in basement be-3PL
 ‘The mice are in the basement.’ NOT ‘There are mice in the basement.’

(59) *Anha danešju-ha-ænd.*
 they student-*ha*-be.3PL
 ‘They are the students.’ NOT ‘They are students.’ (Ghomeshi, 2003)

(60) *Ketab-ha-ye jaleb-*(o) xund-æm.*
 book-*ha*-EZ interesting-*ra* read.PAST-1 SG
 ‘I read the interesting books.’

However, as noted by Ghomeshi (2003), nominals containing *-ha* can be made indefinite by the addition of the indefinite enclitic *-i*, as in (61), and *-ha* can appear on the nominal part of a compound verb, as shown in (62).

(61) a. *Bæčče-ha-ye bahuš-i unja bazi=mi-kærd-æn.*
 child-*ha*-EZ clever-INDEF there play=CONT-do.PAST-3PL
 ‘Clever children are playing there.’

b. *Ketab-ha-ye jaleb-i xund-æm.*
 book-*ha*-EZ interesting-INDEF read.PAST-1 SG
 ‘I read (some) interesting books.’

(62) a. *Bæhs-a=kærd-im.*
 debate-*ha*=do.PAST-1 PL
 ‘We have debated often.’

b. *Kar-ha=kærd-im.*
 work-*ha*=do.PAST-1 PL
 ‘We have done many things.’

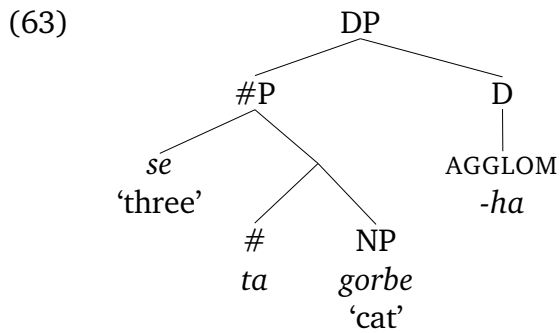
- c. *Dærd-ha=kešid-im.*
 pain-*ha*=pull.PAST-1PL
 ‘We have suffered repeatedly.’

Interestingly, our consultant reports that (62a) can be interpreted either as ‘We debated often,’ i.e., on several occasions, or as ‘We debated a lot,’ meaning at great length on a single occasion. Similarly, (62c) can mean either ‘We have suffered repeatedly,’ or ‘We suffered a lot.’ This range of interpretations is in some way parallel to the availability of both mass and individuated interpretations of *-ha*-marked nominals shown in (57) above.

While a comprehensive treatment of *-ha* would take us beyond the topic of this paper, we believe that *-ha* can be accurately characterized as spelling out only AGGLOM, and that in any case it does not realize >1 . With respect to its role in the definiteness system, we tentatively propose the following:

- *-Ha* itself is specified only with AGGLOM.
- In contexts such as (58), (59), and (61), *-ha* is inserted to spell out an instance of AGGLOM that occurs as a modifier feature (*sensu* Wiltschko, 2009) on D.
- In Persian, the default interpretation of D is definite. A nominal containing a D head can be made indefinite by the addition of *-i* on a higher projection, possibly QP. Indefinite nominals containing neither *-ha* nor *-i* are either #Ps or bare NPs.
- In compound verbs such as those in (62), *-ha* spells out an instance of AGGLOM that is not attached to a D.

For the purposes of the question under consideration in this paper, the only crucial aspect of this analysis of *-ha* is that it does not correspond to the feature >1 . If this is correct, then we can conclude that a nominal like (47) represents neither the combination of a plural marker with a classifier nor the separate spelling-out of a dependent feature and its dominating node. Rather, the structure of (47) is as in (63).



7.3 Other possible classifiers in Persian

While *ta* does not name any specific unit of individuation, and is therefore not a classifier in the relevant sense, there is a set of items that are more plausibly seen as classifiers. These include *jeld* ('volume'), *livan* ('glass'), *ghašogh* ('spoon(ful)'), *dæste* ('bunch'), and *mošt* ('fist, handful'):

(64) *do (ta) jeld ketab*
two *ta* volume book
'two books'

(65) *do (ta) livan čai*
two *ta* glass tea
'two glasses of tea'

(66) *se (ta) ghašogh næmæk*
three *ta* spoon salt
'three spoonfuls of salt'

(67) *pænj (ta) dæste gol*
five *ta* bunch flower
'five bunches of flowers'

(68) a. *ye mošt berenj*
one fist rice
'a/one handful of rice'

b. *se (ta) mošt berenj*
three *ta* fist rice
'three handfuls of rice'

These items can be used either in place of *ta*, as in (69a), or in combination with *ta* and/or *-ha*, as in (69b):

- (69) a. *do jeld ketab*
 two volume book
 ‘two books’
- b. *pænɟ ta jeld ketab-ha*
 five *ta* volume book-*ha*
 ‘the five books’

When one of these items appears together with *ta*, *ta* must come first, as in (69b). The order cannot be reversed, nor can either element be replaced by the other, as shown in (70):

- (70) a. **do jeld ta ketab*
 two volume *ta* book
- b. **do ta ta ketab*
 two *ta ta* book
- c. **do jeld jeld ketab*
 two volume volume book

Like *ta*, these elements cannot appear without a numeral:

- (71) **Jeld ketab xærid-æm.*
 volume book bought-1SG
 Intended: ‘I bought a book/books.’

These elements seem to be nouns, and indeed several of them are used independently as nouns. In the constructions shown here, we propose that they are merged in N, taking an NP complement, but that they move to # if they can. If # is occupied by another overt element such as *ta*, then they remain *in situ*. They are similar in some respects to the Chinese massifiers discussed above in §3.2—nominal elements that individuate mass nouns by specifying a unit of measure. Unlike massifiers, however, they may remain in N and thus co-occur with the # head *ta*.

There is a small set of exceptions to the pattern just illustrated. According to our consultant, words like *kilo* and other purely measuring terms, and the word *næfær*, used

with human beings and animals, cannot co-occur with *ta*. We also have no examples in which they co-occur with *-ha*.

- (72) a. *se* (**ta*) *kilo gušt*
three *ta* kilo meat
'three kilos of meat'
- b. *se* (**ta*) *næfær kargær*
three *ta* person worker
'three workers'

It would thus seem that in Persian, we find no reason to abandon our generalization that plural-marking and classification cannot co-occur in a single nominal. However, much work remains to be done in order to determine exactly what inflectional features are used in the Persian nominal, and how they map to syntactic projections.

8 Conclusions

In this paper, we have been concerned with two aspects of grammatical individuation: numeral classification and plurality. We have proposed that individuation itself is a morphosyntactic feature, #, and that classification and plurality are two ways of elaborating the basic property of individuation. We represent these properties of nominals as features that enter into consistent semantic dependency relations, but which vary in their syntactic configuration. These features, part of a larger system of formal representations of the properties of nominal phrases, offer a precise and explicit way of characterizing the semantic and morphosyntactic roles of a range of morphemes, in various languages, whose meanings appear in some instances to overlap one another. For example, Persian *ta* is sometimes labelled a numeral classifier, and yet it shares only some of the properties of classifiers in Chinese: like them, it appears between a numeral and a noun, but unlike them, it does not appear to classify the noun or otherwise identify the unit of counting. In our system, this is explained by saying that *ta* is a # head, while numeral classifiers, narrowly defined, spell out a dependent feature of #. The similarity between *ta* and true

numeral classifiers follows from the fact that *ta* spells out a feature that is also entailed by such classifiers. Similarly, the Mandarin suffix *-men* looks like a plural suffix because one of the features it realizes is the plural feature >1 , but it differs from plural marking in English because it spells out other features as well, and because it is attached to DefP rather than #P.

While there is no obvious inherent semantic incompatibility between the two elaborations of individuation discussed in this paper, the languages we have investigated here seem never to allow a true numeral classifier and a true plural marker to co-occur on a single nominal. This is, as we noted above in §4, reminiscent of Ritter and Wiltschko's (2005) observations about the temporal, spatial, and personal manifestations of INFL in different languages. Whether the segregation of numeral classifiers and plural marking is a cross-linguistic universal, and if so, why, are questions that remain for further investigation; our system of featural representations provides formal tools with which to sharpen these questions and formulate possible answers.

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