The DP-adjoined plural in Yucatec Maya and the syntax of plural marking

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Abstract

This paper provides an analysis of the syntax of optional plural marking in Yucatec Maya. I argue that plural morphology does not head a functional number projection as has been proposed for a variety of well-known languages, rather it merges as an adjoined modifier to the Determiner Phrase. This analysis explains a number of otherwise curious facts about plural marking in Yucatec Maya: the non-obligatoriness of plural morphology for plural interpretation; plural morphology co-occurring with numeral classifiers; the licensing of bare plurals; the lack of number agreement; a restriction on plural marking on pre-nominal adjectives; the position of plural morphology outside of agreement morphology; and the rise of definiteness and specificity effects with the occurrence of plural marking. I discuss how this analysis of plural marking as a syntactic modifier to DP fits into the typology of the syntax of plurals (Wiltschko, 2008) and has important implications for theories of nominal denotation, number agreement and the status of plural morphology vis-à-vis generalized classifier systems.

Keywords:

1. Introduction

Number is inflectional and obligatory on countable nouns in many well-known languages. In these languages, there is often number agreement within the noun phrase and between nominal and verbal elements. The example in (1) “The girls are singing” from Spanish shows that number agreement between the determiner and noun as well as between the noun phrase and
verb is obligatory.¹

(1) a. Las\textsubscript{PL} muchacha-s\textsubscript{PL} est-an\textsubscript{PL} cantando
b. *Las\textsubscript{PL} muchacha\textsubscript{SG} est-a\textsubscript{SG} cantando
c. *Las\textsubscript{PL} muchacha\textsubscript{SG} est-an\textsubscript{PL} cantando
d. *La\textsubscript{SG} muchacha-s\textsubscript{PL} est-an\textsubscript{PL} cantando

In a variety of other languages, however, plural marking shows very different syntactic properties. In these languages, plural marking not necessary for a noun to be interpreted as referring to a plurality, nor does it trigger obligatory agreement. For example, in Yucatec Maya, the sentence in (2) is not morphologically marked for plural but still can refer to one girl or to more than one.

(2) le x-ch’úupal-o’
DEF FEM-girl-DIST
‘the girl’ / ‘the girls’

When the plural morpheme -o’ob is present, however, the noun must refer to a plurality, shown in (3).

(3) le x-ch’úupal-o’ob-o’
DEF FEM-girl-PL-DIST
‘the girls’ / NOT: ‘the girl’

Unlike the Spanish example in (1), in Yucatec, the presence of the plural marker does not trigger obligatory agreement in the nominal or clausal domains, as shown in (4) through (7). In fact, in some instances, speakers find it infelicitous to have plural marking on both the noun and adjective, shown in (5).

In the sentential domain, the plural marker -o’ob can co-occur on the nominal and verbal phrases, but in some word order variations, it is judged to be less felicitous when plural is marked on a verb phrase and not on its argument noun phrase, as in (7).

(6) Táán u k’aay le x-ch’úupal-o’ob-o’
    PROG A3 sing DEF FEM-girl-PL-DIST
    ‘The girls are singing’

(7) a. Táán u k’aay-o’ob le x-ch’úupal-o’ob-o’
    b. ?Táán u k’aay-o’ob le x-ch’úupal-o’

Additionally, the plural morpheme can co-occur with a numeral classifier in Yucatec Maya, as in (8). This is a topic which we will return to in Section 3 because plural morphology and classifiers have been predicted not to co-occur (Greenberg (1963), Sanches and Slobin (1973), Chierchia (1998), Borer (2005)).

(8) ka’a-túul x-ch’úupal-o’ob
    two-CL.AN FEM-girl-PL
    ‘two girls’

Examples of plural marking co-occurring with classifiers in nominal phrases can be found in Yucatec Maya narratives and conversations in addition to elicitation contexts. In a recorded conversation between two people, one asks the other how many years he has been teaching in a village called K’anasiin. The teacher gives the reply in (9) involving a numeral classifier and the plural morpheme. Another example comes from a story about three charming girls, in which they are referred to affectionately as “the three ciders,” shown in (10) which also has a numeral classifier and plural marking in the same nominal phrase.
In this paper, I provide a Minimalist style analysis of this ‘different’ type of plural marking in Yucatec Maya. I argue that it does not head a functional Number projection (#P), as has been shown for plural morphology in a number of languages including Hebrew (Ritter, 1991, 1995), Hungarian (Szabolcsi, 1983) and Romance (Bernstein, 1991; Delfitto and Schroter, 1991; Picallo, 1991; Valois, 1991), among other languages. This configuration is shown in the tree in (11).

(11) Plural heads #P

In contrast, the Yucatec Maya plural merges as a syntactic modifier which cannot change the category label of the item with which it merges. It does not merge at the level of the Number Phrase, however. It merges high in the Determiner Phrase. This configuration is depicted in (12).
(12) Plural adjoins to DP

I examine the distributional evidence that plurals merge at the level of DP in Yucatec Maya, which includes the co-occurrence of plurals and classifiers, the infelicity of plural marking on pre-nominal adjectives, the position of plural morphology outside of possessor agreement and the inability of third person emphatic pronouns to form contractions. My analysis also predicts a number of interpretational phenomena to follow from attachment of the plural at DP. Plural marking should license argumenthood, and plural marking should give rise to definiteness or specificity effects. I show that these prediction are borne out in Yucatec Maya.

This analysis bares on a number of major previous analyses that consider the syntax and semantics of plural morphology (Chierchia, 1998; Borer, 2005). My proposal follows a recent analysis of plural morphology as adjoined to an acategorial root (rather than #P) in Halkomelem. My paper also examines the typology of the syntax of plurals (Wiltschko, 2008). I briefly examine evidence for the different language types in which plurals adjoin at points in the nominal phrase other than the #P and DP, namely nP and QP.

2. Yucatec Maya basics

Yucatec Maya is a member of the Mayan language family. It has about 800,000 speakers in and around the Yucatan Peninsula of Mexico. Yucatec is a head-marking language that marks its arguments morphologically by cross-reference affixes in the verbal core, not by case marking on nominal elements. Yucatec has two paradigms of cross-reference markers that encode person and number information. Mayanists use the theory-neutral terms “Set A” (which has been called the ergative set) and “Set B” (which has been called
absolutive set). I will also adopt the Set A, Set B naming convention. The table in (13) shows the Set A cross-reference markers. Set A consists of a pre-verbal person marker, which is followed by an epenthetic glide when preceding a vowel-initial verb stem. In the plural, the Set A markers consist of a pre-verbal person affix, which can form a contraction with a preceding aspect auxiliary, and a discontinuous post-verbal person and number suffix. The pre-verbal elements of the second and third person plural markers are the same as in the singular. Additionally, the third person plural marker is optional.

(13) Set A cross-reference markers

<table>
<thead>
<tr>
<th>Person</th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>in(w)</td>
<td>k...-o’on</td>
</tr>
<tr>
<td>Second</td>
<td>a(w)</td>
<td>a(w)...-e’ex</td>
</tr>
<tr>
<td>Third</td>
<td>u(y)</td>
<td>u(y)...(-o’ob)</td>
</tr>
</tbody>
</table>

The Set B cross-reference markers are shown in the table in (14). In the plural, the Set B verbal suffixes are the same as the suffixal element of the discontinuous suffix of the Set A plural markers. In the case of the Set B markers, however, the third person plural is not optional.

(14) Set B cross-reference markers

<table>
<thead>
<tr>
<th>Person</th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>-en</td>
<td>-o’on</td>
</tr>
<tr>
<td>Second</td>
<td>-ech</td>
<td>-e’ex</td>
</tr>
<tr>
<td>Third</td>
<td>-∅/-ij</td>
<td>-o’ob</td>
</tr>
</tbody>
</table>

The Set A marker cross-references the agent of a transitive verb. The Set B marker cross-references the patient or undergoer of a transitive verb. The split in the argument alignment pattern occurs in the intransitive verbs. The single argument of an intransitive verb is marked with the corresponding Set A marker in the incompletive, or imperfective, aspect and with the appropriate Set B marker in the completive, or perfective, and in the subjunctive and extrafocal aspects (Bohnemeyer, 2002). The example in (15) shows that in a transitive sentence, the agent is marked with the third person Set A marker -uy and the undergoer is marked with the first person Set B marker -en.
In an intransitive sentence in the completive, or perfective, aspect, the argument is marked with the third person Set A marker, $u$ in the sentence in (16) and with the first person Set A marker $in$ in the sentence in (17).

(16) k $u$ wen-el
    IMPF A3.SG sleep-INC
    ‘S/he sleeps.’

(17) k $in$ jook’-ol
    IMPF A1.SG go.out-INC
    ‘I go out.’

With an intransitive sentence in imperfective (or incompletive) aspect, however, the argument in the same sentence is marked with the third person Set B marker, $-ij$ in the sentence in (18) and with the first person Set B marker $-en$ in the sentence in (19).

(18) j wen-ij
    CMP sleep-INC.B3.SG
    ‘S/he slept.’

(19) j jook’-$\emptyset$-en
    PFV go.out-CMP-B1.SG
    ‘I went out.’

The plural morpheme -$o^\prime ob$ functions as an optional Set A marker or an obligatory Set B marker. It also applies to nominal phrases to pluralize the referent. When it attaches to verbs and predicate adjectives, it cross-references a plural argument. The examples in (20) and (21) are ambiguous between a number of possible interpretations depending on what the plural morpheme is taken to function as. In (20), the plural morpheme can be interpreted as modifying the noun ‘dog’ or the third person possessor. In (21), the plural morpheme can be interpreted as modifying the agent or undergoer of the carrying event.

(20) k uy il-ik-en
    IMPF A3.SG see-INC-B1.SG
    ‘S/he sees me.’

(21) k uy jook’-ol
    IMPF A3.SG go.out-INC
    ‘S/he went out.’

The plural morpheme -$o^\prime ob$ functions as an optional Set A marker or an obligatory Set B marker. It also applies to nominal phrases to pluralize the referent. When it attaches to verbs and predicate adjectives, it cross-references a plural argument. The examples in (20) and (21) are ambiguous between a number of possible interpretations depending on what the plural morpheme is taken to function as. In (20), the plural morpheme can be interpreted as modifying the noun ‘dog’ or the third person possessor. In (21), the plural morpheme can be interpreted as modifying the agent or undergoer of the carrying event.
2.1. Motivating the DP hypothesis for Yucatec

The DP Hypothesis proposes that the functional Determiner Phrase dominates and heads the noun phrase and acts like the nominal counterpart to the CP in the sentential domain. Abney (1987) draws some empirical support for the hypothesis from the Mayan language Tzutujil (with data from Dayley 1985) in which a possessed noun agrees with its subject in the same manner, and with the same morphemes in fact, as a verb agreeing with its subject. In this section, I motivate this hypothesis for Yucatec Maya as well. In fact the two previous examples in (20) and (21), repeated below in (22) and (23) demonstrate this point quite well. In the nominal phrase in (22) the possessor of the noun is marked with the third person Set A marker \( u \). Likewise, in the verbal phrase in (23) the agent (or subject) is marked with the same Set A third person marker \( u \). In both the nominal and verbal clauses plural arguments are marked with the same plural marker -o’ob, which can pluralize either the noun ‘dog’ or the third person possessor in (22), or it can pluralize either the agent/subject or patient/object in (23).

(20)  \( u \)  péek’-o’ob  
A3 dog-PL
‘their dog’ / ‘his dogs’ / ‘their dogs’ (Lucy, 1992, 47)

(21)  T-\( u \)  bis-aj-o’ob  
PFV-A3 carry-CMP-PL
‘S/he took them.’ / ‘They took it.’ / ‘They took them.’ (Lucy, 1992, 53)

2.2. Other nominal elements

In terms of nominal constituents, Yucatec Maya has a definite determiner which often, but not obligatorily, co-occurs with one of two noun phrase-final
deictic particles, distal (which I call DIST for clarity, but Yucatec scholars label d2) and proximate (which I label PROX, but Yucatec scholars often label d1). The distal and proximate deictic particles cannot occur without the definite determiner, shown in (24) and (25).

(24) *(le) maak-o'
    DEF person-DIST
    ‘the person (there)’

(25) *(le) ko’olel-a’
    DEF woman-PROX
    ‘the woman (here)’

Yucatec Maya has a small class of adjectives that typically occur pre-nominally, shown in (26) but can also occur post-nominally, as a reduced relative clause (Bohnemeyer, p.c.), shown in (27).

(26) le nuxi peek’-o’
    DEF big dog-DIST
    ‘the big/old dog (there)’

(27) le peek’ nuxi-o’
    DEF dog nuxi-DIST
    ‘the big/old dog (there)’ / ‘the dog that is big/old (there)’

Yucatec Maya has a generalized numeral classifier system. Classifiers attach to the numeral, occur pre-nominally and are obligatory when enumerating nominal elements, as in (28).

(28) oox-*(túul) peek’
    three-CL.AN dog
    ‘three dogs’

In Section 3, I highlight some reasons that an analysis of optional non-inflectional plural marking is important because it instantiates a different syntactic category. Its analysis bares on a number of major theoretical debates on nominal denotation cross-linguistically, number agreement and the status of plural morphology and classifiers.
3. On the significance of non-inflectional plural marking

3.1. Nominal denotation

The issue of variation in nominal morphosyntax and the denotation of nouns cross-linguistically is an issue closely related to the analysis of non-inflectional plural marking. A traditional course of explanation is that in inflectional plural languages, plural marking is obligatory for countable nouns, indicating an inherent difference between count and mass nouns that is reflected in the syntax. Countable plural nouns take obligatory plural marking (e.g. *squirrel-s*), while mass nouns, which are inherently plural, do not (e.g. *dough*). In languages in which plural marking is optional and non-inflectional, there is assumed to be a lack of count-mass distinction inherent in the semantics of the nouns of that language. Because plural marking is not available to differentiate count from mass nouns, these language must lack this inherent difference. All nouns denote masses and are already inherently plural. There have been some objections to this proposal, however. Cheng and Sybesma (1999) argued that there is a difference between count and mass nouns in Mandarin Chinese. Chinese is a language with a generalized classifier system, but Cheng and Sybesma (1999) pointed out that count and mass nouns do differ in that there is a set of classifiers that combines with count nouns and another set, which they call “massifiers” which combine with mass nouns. Yucatec Maya shows the same properties. There are some classifiers which combine with countable nouns and other that combine with mass nouns, and they are restricted from occurring in the opposite class.

Since there is already a wealth of evidence that plural morphology heads a functional Number projection (Ritter, 1991, *inter alia*), and there is growing evidence that classifiers might also head functional projections within the DP (Cheng & Sybesma, 1999; Li, 1999; Borer, 2005; Gebhardt, 2009), then there is reason to believe that the apparent differences between these two types of languages may be syntactic. In languages like English and Romance plural morphology heads a functional Number Phrase. On the other hand, in classifier-type languages, like Mandarin Chinese and Yucatec Maya plural morphology is optional but classifiers (or at least numeral classifiers in Yucatec) are not. This issue of the relationship between plural marking and classifiers, I will take up in more depth in Section 3.3.
3.2. Number agreement

Since the DP hypothesis (Abney, 1987; Brame, 1982; Szabolcsi, 1983), the Number Phrase has been shown to be the locus of plural morphology. This functional head presumably stands in some relationship with the agreement mechanism that is responsible for the appearance of covariant plural marking on the verb, such as the Agree operation described in Chomsky (2000; 2001). If, however, some plurals do not head a Number phrase, as this work proposes, they would not introduce an uninterpretable number feature, [u#] on T, which would need to take its value from the feature on the DP feature. Thus, there would be no probe in the clausal domain and no Agree operation for number (Wiltschko, 2008). This scenario is diagrammed in (29).

(29) No Agree for number

```
TP
 /  \\  \\
DP VP
 / \  \\  \\
[i#: PL] D
 /  \  \\  \\
DEF nP
```

In the familiar case of inflectional, number-agreement languages, such as English, the plural feature in the nominal domain is interpretable for number. The uninterpretable number feature on T triggers a probe to search for and get its value from the matching uninterpretable number feature on a probe in its search domain. This scenario is diagrammed in (30).

(30) Agree for number

```
TP
 /  \\  \\
DP T
 /  \  \\  \\
DEF #P [u#: PL] VP
 /  \  \\
[i#: PL] nP
```
3.3. Plurals and classifiers

A number of scholars have made proposals which explicitly rule out the co-occurrence of plural morphology (at least "compulsory plurals" as Greenberg calls them or "the type familiar from many Western languages" as Chierchia calls them) and classifiers both in the functional-typological literature (Greenberg, 1963; Sanches and Slobin, 1973) and in the formal generative literature (Chierchia, 1998; Borer, 2005). These proposals work under the assumption that plural morphology and classifiers perform the same function, that is individuation of mass nouns into countable bodies, but they also assume that all plurals instantiate the same syntactic category, which I argue is not the case. Let us briefly investigate the denotation and morphosyntax of plural morphology in Yucatec Maya in light of Chierchia’s (1998) Nominal Mapping Parameter.

Chierchia proposes two semantic features, \([\pm \text{arg(ument)}]\) and \([\pm \text{pred(icate)}]\), that govern the way in which the syntactic category N is mapped onto its LF interpretation. There are three mapping possibilities: kinds, properties or mixed (with features of both kinds and properties). In a \([+\text{arg}] [-\text{pred}]\) language, such as Chinese and Japanese, bare nouns are mapped onto kinds, which are functions from worlds to pluralities (type \(<e>\)). This language type will display three major morphosyntactic properties that follow from the settings of the two semantic features: 1) They allow bare noun to be arguments, 2) They lack plural morphology (since kinds are the neutralization of the singular/plural distinction) and 3) They have a generalized classifier system that functions to individuate nouns. On the other hand, a \([-\text{arg}] [+\text{pred}]\) language maps bare nouns onto properties. These languages, such as French and Italian, do not allow bare nominal arguments, but arguments much combine with a determiner to be morphosyntactically licensed. A final type of language, \([+\text{arg}] [+\text{pred}]\), is mixed and maps bare arguments to kinds for mass nouns and bare plurals and to properties for count nouns. This explains why in English count nouns require determiners but mass nouns and bare plurals are licensed without determiners.

We have enough information about Yucatec Maya already in order to make the prediction that it would be a \([+\text{arg}] [-\text{pred}]\) language, such as Chinese and Japanese in Chierchia’s theory. There is however, one major problem: Yucatec has a generalized numeral classifier system but also has plural morphology and even allows plurals to co-occur with numeral classifiers in the same phrase. The same has been shown to occur in Persian, among other languages.
The idea that in classifier languages all nouns denote masses (and are inherently plural) is has been questioned recently based on the observation that classifiers cannot co-occur with quantity adverbials, such as many whereas in English these quantity adverbials must occur with plural morphology (e.g. many cat-s / *many cat versus Persian xeyli gorbe ‘many cat’ / *xeyli ta gorbe ‘many CL cat’ as Gebhardt 2009 shows).

Borer (2005) relies on the same intuition as Chierchia, that plurals and classifiers are in complementary distribution, but she eases the rigidity of his proposal somewhat. She states that plurals and classifiers can occur within a language, so long as they do not co-occur within the same structure, which is true of languages such as Armenian, Borer shows. As we have seen from Yucatec Maya and Persian, this generalization is still not tenable. My proposal is that plural morphology in Yucatec Maya does not in fact head a Number projection, rather it merges as a syntactic modifier adjoined to the DP. If this analysis is on the right track, then we have a more concrete idea of what it means to be a plural “of the kind familiar from many western languages” (Chierchia, 1998, 353) and what it means to be a different sort of plural. Familiar “western” plurals head functional Number projections, but other plurals may not. Moreover, if this analysis is correct, then we can salvage Borer’s proposal that the Number Phrase and the Classifier Phrase are in fact in complementary distribution, given that plural morphology in classifier languages does not instantiate the functional category of Number. I argue that plural morphology in Yucatec Maya does not head a functional Number Phrase, rather it merges at the level of DP. It is an adjunct, without the ability to change the category label of the phrase with which it merges. This proposal is based on recent work on the status of plural morphology in Halkomelem as adjoined to an acategorial root (Wiltschko, 2008).

4. A typology of plurals

As we have seen, plural morphology in better known languages, such as Hebrew and Romance languages, has been shown to head a Number Phrase within the Determiner Phrase domain (see Bernstein (2008) for an overview). In recent advances in the syntax of non-inflectional plural marking, however,
there is evidence that not all plurals merge as the head of a Number Phrase (Li, 1999; Ghomeshi, 2003; Wiltschko, 2008). Halkomelem, for example, has been shown to be a language in which plural morphology merges as a syntactic modifier to an acategorial root (Wiltschko, 2008). The fact that plural marking is optional and does not trigger agreement is evidence for its status as a syntactic modifier. The fact that plural morphology in Halkomelem can occur inside of compound and derivational morphology is evidence that it cannot merge as high as #P, but rather, it is adjoined to the root. In fact, Wiltschko (2008) proposes a typology of plural marking in which languages vary parametrically based on how the plural is merged and where the plural is merged. Plural morphology can be merged either as a head or as a syntactic modifier (an adjunct), summarized in Section 4.1. Also, plural morphology can be merged at various levels of the DP, including DP, NumP, nP and √root, outlined in Section 4.2.

4.1. How plurals merge

The first aspect of the parametric variation that is possible in the syntax of plural marking is how plurals merge. Plurals can merge as the head of a phrase, whereby changing the syntactic category of the noun with which it merges to Number, depicted in (32). Other plurals do not have the category-changing potential. They merge as modifiers without the ability to change the category of the element with which they merge, as in (33). If a plural merges as a modifier to n, for example, the phrasal category remains nP with an adjoined number category (Wiltschko, 2008).

(32) Plural merges as head (adapted from Wiltschko (2008))

\[
\begin{array}{c}
\text{x: PLURAL} \\
\text{x: PLURAL} \quad \text{y}
\end{array}
\]

(33) Plural merges as modifier (adapted from Wiltschko (2008))

\[
\begin{array}{c}
\text{y} \\
\text{PLURAL} \quad \text{y}
\end{array}
\]

The syntactic variation allowed in the merging of plural morphology is summarized in (34).
How plurals merge

- Head: Number merges with nouns and results in a new syntactic object which has the same label, Number
- Modifier: Number merges with nominals but cannot change the syntactic label

An essential aspect of Wiltschko’s (2008) typology of plural marking is that plurals can be merged to various phrase levels within the nominal phrase, which I discuss in Section 4.2.

4.2. Where plurals merge

Plural morphology also varies cross-linguistically based on where the plural is merged along the DP. In the well-established cases of Hebrew and Romance, plurals merge at the Number Phrase. In Halkomelem, though, plural morphology has been shown to merge at the level of the root, based on the observations that it can occur between noun-noun compounds (35) and that reduplicative plural morphology ignore the presence of morphology, shown in (36) through (38) (Wiltschko, 2008).

(35) s-xexp′-f:tsel
    NOM-stripe.PL-back
    ‘chipmunk (with more than two stripes’ (Wiltschko, 2008, 644) data from (Galloway, 1980, 63)

(36) p′-eq’
    white
    ‘white’

(37) s-p′-eq’
    NOM-white
    ‘white spot on skin’

(38) s-p′-eq’-p′eq’ (*sp′eq’sp′eq’)
    NOM-white.PL
    ‘white spots on skin’ (Wiltschko, 2008, 645) data from (? , 379)

The summary diagram in 39 has arrows on the left which indicate the points at which a plural morpheme could merge within the DP, based on Wiltschko’s (2008) typology.
So far, we have outlined evidence that in a number of well known cases the plural heads the functional #P (Hebrew and Romance). Wiltschko (2008) presents evidence that in Halkomelem the plural merges with the root. In Section 5, I outline the evidence that plural morphology in Yucatec Maya merges as a syntactic modifier at the level of the DP, then in Section 4, I examine evidence for a language that may provide an example of the only type not yet shown, merge at the nP level.

5. Yucatec Maya plural as DP-adjoined

Yucatec Maya is a language in which the plural morpheme is a syntactic modifier that merges at the level of the Determiner Phrase. In this section, I outline the evidence for this proposal. As aforementioned, the plural marker in Yucatec is optional. It does not trigger obligatory agreement. Additionally, there are, to my knowledge, no irregular plurals. These facts point to the adjoined status of the plural marker. In Section 5.1, I show evidence that the Yucatec Maya plural does not merge at the level of the root phrase, the nP or the #P.

5.1. Where the Yucatec plural does not merge

The plural morpheme in Yucatec does not merge with the root. It cannot occur inside of compounds, shown in (41) (c.f. (40)) or inside of derivational morphology.

(40) le pol-ch’oom-o’ob-o’
DEF head-parrott-PL-DIST
‘chatterboxes’
The Yucatec Maya plural does not appear to adjoin at the level of the Number Phrase. If we assume that classifiers are situated in the Number Phrase (Fukui and Tanako (2000); Tang (1990); Kawashima (1994, 1998); Watanabe (2006) c.f. Li (1999); Cheng & Sybesma (1999); Borer (2005); Simpson (2005); Gebhardt (2009)), then we would not expect to see the co-occurrence of classifiers and plural morphology, but we do indeed observe that scenario in Yucatec Maya, as we saw in examples (8) through (10), with (9) repeated here as (42).

(42) óox-p’él ja’ab-o’ob
three-CL.IN year-PL
‘three years’ (Blair and Vermont-Salas, 1967, 454)

One piece of distributional evidence that the plural morpheme merges higher than the nP is that it cannot occur on a pre-nominal adjective, but it can occur on a post-nominal adjective. The example in (43) is acceptable, but the the examples in (44) with plural marking on a pre-nominal adjective are not, even if plural marking occurs on the head noun as well as the adjective, as in (44b).

(43) le ki’ichpam x-ch’úupal-o’ob-o’
def pretty fem-girl-PL-DIST
‘the pretty girls’

(44) a. *le ki’ichpam-o’ob x-ch’úupal-o’

b. *le ki’ichpam-o’ob x-ch’úupal-o’ob-o’

I take this as evidence that the plural merges higher than the nP, diagrammed in (45) versus (46).

(45) le ki’ichpam x-ch’úupal-o’ob-o’
In contrast with Yucatec Maya, Walloon has been argued to be a language in which the Number Phrase is a motivated projection (Bernstein, 1991). In Walloon, unlike Yucatec, the plural marker occurs in #P, and plural marking can occur attached to pre-nominal adjectives, shown in (47) and (48), with the plural marker on the adjective underlined (Bernstein, 2008, 556) (data from Remacle 1952 and Morin 1986).²

(47) dès vêtes-ouh ‘some green doors’

(48) dès nêurs-ouy ‘some black eyes’

There is also interpretational evidence that the Yucatec plural does not adjoin to the lexical n/v/a/ level. Though the homophonous plural -o‘ob can combine with nouns, verbs and adjectives, when it combines with verbs, it does not pluralize the event. Likewise, when it combines with adjectives, it

²Plurals in Walloon are only used in writing, however (Bernstein, 1991).
does not intensify the property, rather on verbal and adjectival predicates, it functions to cross-reference a plural argument. Now, I turn to the evidence that supports the proposal that the plural morpheme in Yucatec Maya merges at the level of DP.

5.2. Evidence for DP adjunction

In this section, I outline the distributional and interpretation facts that lead to the conclusion that the plural morpheme in Yucatec Maya is merges at the level of DP.

5.2.1. Plural outside of agreement morphology

One piece of distributional evidence that the Yucatec plural adjoins high in the Determiner Phrase is that it occurs outside of agreement morphology, shown in (49). The plural -o’ob which modifies the noun suku’un, ‘brother,’ occurs outside of the obligatory second person plural agreement suffix -e’ex which co-references the possessor.

(49) Kux t´ uun a suku’un-e’ex-o’ob?
what.about then a2 elder.brother-b2pl-pl
‘What about your (pl) elder brothers?’

Interestingly, first and second person plural co-reference markers are not optional, while third person -o’ob is. First and second person plural agreement triggers obligatorily agreement in the verbal domain, while the third person -o’ob does not. An example of obligatory agreement with second person plural is shown in (50). Thus, we may conclude the first and second person plural marking occurs in the domain of the Number Phrase, or alternatively in an agreement projection, both of which would occur in the inflectional domain of the DP, lower than the DP and higher than the nP. Third person plural marking, on the other hand, does not. This is shown in the tree in (51), which represents the example in (49).

(50) Te’ex-e’ t´aan a k’ay*-(e’ex)
PRN2PL-TOP PROG A2 sing-B2PL
‘As for you (pl), you are singing.’

(51) Plural higher than number agreement
5.2.2. Contraction

Another piece of distributional evidence for DP adjunction of the Yucatec Maya plural comes from the composition of the emphatic pronouns. The paradigm of emphatic pronouns is constructed from the combination of a locative preposition *ti*’ and the Set B cross-reference marker. The first and second person singular and plural forms obligatorily form contractions, while the third person plural form cannot contract and requires the presence of the definite determiner (Bohnemeyer 2002), shown in the table in (52).

(52) Yucatec Maya emphatic pronouns (adapted from (Bohnemeyer, 2002))

<table>
<thead>
<tr>
<th>Person</th>
<th>Singular</th>
<th>Plural</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>teen &gt;</td>
<td>to’on &gt;</td>
</tr>
<tr>
<td></td>
<td>ti’ + -en</td>
<td>ti’ + -o’on</td>
</tr>
<tr>
<td></td>
<td>LOC + B1</td>
<td>LOC + B1PL</td>
</tr>
<tr>
<td>Second</td>
<td>tech &gt;</td>
<td>te’ex &gt;</td>
</tr>
<tr>
<td></td>
<td>ti’ + -ech</td>
<td>ti’ + -e’ex</td>
</tr>
<tr>
<td></td>
<td>LOC + B2</td>
<td>LOC + B2PL</td>
</tr>
<tr>
<td>Third</td>
<td>*ti’ &gt;</td>
<td>*to’ob &gt;</td>
</tr>
<tr>
<td></td>
<td>ti’ + 0</td>
<td>ti’ + -o’ob</td>
</tr>
<tr>
<td></td>
<td>LOC + B3</td>
<td>LOC + B3PL</td>
</tr>
<tr>
<td></td>
<td>le-ti’</td>
<td>le-ti’-o’ob</td>
</tr>
<tr>
<td></td>
<td>DEF-LOC</td>
<td>DEF-LOC-PL</td>
</tr>
</tbody>
</table>

5.2.3. Argument licensing

If the Yucatec Maya plural is in fact merged at the level of the DP, we would predict a number of properties related to the function of the Determiner Phrase to follow from its presence. First, we would predict the plural
marker to be pronominal in nature, since pronouns have been argued to reside in D (Abney, 1987; Ritter, 1995, and before that (Postal, 1966)). The DP is argued to be the locus of referentiality in the nominal phrase (Longobardi, 1994). We do observe pronominal-like behavior of the plural marker, as shown in (53) with the plural marker denoting a third person plural pronominal referent.

(53) Kanáan-t a baj-e’ex ti’-o’ob
    ‘Beware of them.’ (Lehman, 1989, 113)

Second, we would predict that the presence of the plural marker could license arguments, since the DP has been postulated to be a necessary ingredient for argumenthood (Szabolcsi, 1987, 1994; Stowell, 1989; Longobardi, 1994; Cheng & Sybesma, 1999). This prediction is borne out. We observe that in Yucatec Maya, bare plural arguments are licensed, albeit with a generic or kind-reference, shown for an agent/subject in (54) and for a patient/object in (55).

(54) Ko’lel-o’ob-e’ ma’ táan u bin-i’
    woman-PL-TOP NEG PROG A3 go-D4
    ‘Women don’t go there.’ (Verheoven, 2007, 105)

(55) Juan-e’ k-u meent-ik chak k’áan-o’ob
    Juan-TOP IMPF-a3 make-INC red hammock-PL
    ‘As for Juan, he makes red hammocks.’ (Tonhauser, 2009, 4)

5.2.4. Definiteness and specificity effects

Another prediction that we would make is that the presence of the plural morpheme could trigger definiteness and specificity effects, since the DP is known to be the locus of definiteness (Ghomeshi, 2003) and potentially specificity.\(^4\) The following example in (56) and (57) from a Yucatec Maya-speaking consultant shows how plural marking gives rise to specificity effects.

If a person goes to school wearing a new pair of shoes, people will ask him or her:

---

\(^3\)Since I am proposing that the Yucatec Maya plural adjoins to the DP, I would have to assume that it occurs in a DP with a null D head.

\(^4\)but see recent work by Coppock and Wechsler (to appear) for arguments that DP-hood cannot explain agreement with definite objects in Hungarian.
If, however, a person goes to a shoe store and sees one pair of shoes that look somewhat old on a rack with a bunch of other new shoes, they will ask:

(57) Tumben le xanab-o’ob-o’
     new DEF shoe-PL-DIST
     ‘Are those shoes new?’  

The sentence in (57) with plural marking applies to a situation in which a person is referring to one specific pair of shoes among a larger set of shoes that exists throughout the shoe store. In another example, an instance of plural marking on the object and cross-referenced on the verb of a conjoined clause with an elided object results in an obligatory wide scope reading, also called the specific reading of the indefinite, shown in (58). Here, Juan and Pedro have seen the same pumas.

(58) Juan-e’ t-uy=il-ah jun-tuul koj-o’ob beyxan Pedro t-uy=il-ah-o’ob
     Juan-d3 PFV-A3-see-CMP one-CL-AN puma-PL also Pedro PFV-A3-see-CMP-PL
     ‘Juan saw pumas and Pedro saw them too. / NOT: Juan saw pumas and Pedro saw some too.’  

When there is no plural cross-reference marking, but a gap instead, as in (59), both the narrow scope and wide scope readings are possible interpretations of the sentence. Juan and Pedro may have seen different pumas.

(59) Juan-e’ t-uy=il-ah jun-tuul koj-o’ob beyxan Pedro t-uy=il-ah-o’ob
     Juan-d3 PFV-A3-see-CMP one-CL-AN puma-PL also Pedro PFV-A3-see-CMP-PL
     ‘Juan saw pumas and Pedro saw them too. / Juan saw pumas and Pedro saw some too.’  
     (Norcliffe, 2009, 90)

Though in these examples, plural marking is not on the nominal phrase, there is presumably some licensing relationship between the predicate and argument that gives rise to these effects, but this will have to be left for another paper. Now that I have provided distributional and interpretational evidence for the DP adjunction of the plural marker in Yucatec Maya, we can revisit the syntactic typology of plurals.
6. Revisiting the typology

We have seen evidence that plural morphology adjoins to the root in Halkomelem (Wiltschko, 2008). I have argued that the plural marker in Yucatec Maya is an example of a language in which the plural adjoins to the DP. As a possible example of another language in which the plural merges at DP, Ghomeshi (2003) presents evidence that the plural marker -\textipa{\textipa{ha}} in Persian is only licensed at the level of the D/QP because the presence of the plural marker triggers definiteness effects. The example in (60) shows the indefinite reading, while the example in (61) shows a definite interpretation with plural marking.

(60) ketab xund-æm.
    book read.PST-IND
‘I read books.’

(61) ketab-ha-*\textipa{\textipa{ro}} xund-æm.
    book-PL-OM read.PST-IND
‘I read the books.’

Though the example in (61) also has the object marker -\textipa{\textipa{ro}}, the example in (62) with a plural subject does not, and plural marking still results in a definite interpretation, according to Ghomeshi.

(62) bæčče-ha gerye=\textipa{\textipa{kæræ-ænd}}.
    child-PL cry=do.PST-3PL
‘The children cried.’ (Ghomeshi, 2003, 57)

There have been proposals providing evidence for plurals that merge at the level of nP as well. Kramer (2009) shows that irregular plurals in Amharic occasionally give rise to special interpretations, which is an indication that irregular plurals are nP plurals (based on arguments by Arad (2003; 2005) and Marantz (2001; 1997) that word formation at the level of the root in combination with a category-defining head, such as nP is more susceptible to phonological, and in this case, semantic irregularities). Kramer’s main piece of distributional evidence is that the phenomenon of double pluralization, which she reports is common in Amharic, as in (63) which has an irregular plural and a regular plural co-occurring.
Kramer argues that the irregular plural must combine with n, while the regular plural must combine with Num, since the opposite order of plural morphemes is ungrammatical, shown in (64).

(64) *k’al-otsts-at
    word-REG.PL-IRREG.PL
    ‘words’

A similar phenomenon can be observed in Yucatec Maya borrowings from Spanish. In some cases, Spanish nouns are borrowed in the singular, and the Yucatec plural -o’ob is used, as in (65). In other cases, Spanish nouns can be borrowed with plural inflection, in which case the pluralized Spanish noun may suffice, or the Yucatec Maya plural may be used in addition to the pluralized Spanish noun, as in (66).

(65) ... bey t-u beet-aj-o’ob tuláakal tu’ux le éespanyool-o’ob-o’
    thus PFV-A3 do-CMP-PL all where DEF Spanish-PL-DIST
    ‘...that Spaniards did so everywhere’ (Lehman, 1989, 90)

(66) ... ba’ax j tal u bet le éespanyool-es-o’ob-o’
    what CMP come A3 do DEF Spanish-PL(SP)-PL-DIST
    ‘...what the Spaniards came to accomplish’ (Lehman, 1989, 111)

Assuming that the Spanish noun borrowed with plural inflection is borrowed into Yucatec at the level of the Number Phrase and with the syntactic information in tact, then this would provide evidence that the Yucatec plural, being able to co-occur with the Spanish plural in borrowings, is of a different syntactic category.

Now we have arguments for the plural morphology that merges at the level of the DP (from Yucatec Maya and Persian). We have known for some time that plurals merge as heads of a functional Number Phrase in a variety of languages (especially Hebrew and Romance). Recently, evidence has emerged for plural morphology that merges at the level of the lexical categorizing head nP (Amharic irregular plurals) and for plural morphology that merges at the lowest possible level, the level of the root (Halkomelem). The tree in (67) summarizes this cross-linguistic evidence for the different syntactic positions that have been shown to be occupied by plural morphology.
(67) Language types in the syntax of plural marking

Since there have been some cartographic expansion of the functional projections that are argued to be possible in the DP, the question naturally arises as to whether we might find languages in which the plural merges to a phrase other than those examined here (DP, #P, nP and \sqrt{root}). I can only speculate here, but there might be evidence from Korean for a plural that is adjoined to the Quantifier Phrase, which is argued to be the complement of DP. The plural marker -tul in Korean has been analyzed as a marker of distributivity (Park, 2008) (data from Kwak (2003)). The sentences in (68) and (69) show that the plural marker -tul is optional in collective predicates with a distributive sub-entailment. When -tul is present, however, as in (69) the reading is that all of the professors participate.

(68) Swuhakkwa kyoswu-ka kyosil-ey moyessta Math-department professor-NOM classroom-LOC gather-PST 'Professors of a math department gathered in the classroom.'

(69) Swuhak-kwa kyoswu-tul-i kyosil-ey moyessta Math-department professor-tul-NOM classroom-LOC gather-PST '(All) The professors of a math department gathered in the classroom.'

The examples in (70) and (71) show that in truly collective predicates (with no distributive sub-entailment), the plural marker -tul is infelicitous.

(70) Swuhak-kwa-nun kyoswu-ka ney myeng-ita Math-department-TOP professor-NOM four CL-CPL-DC 'The professors of a math department are a group of four.'
The plural marker in Korean could, based on this small piece of interpretational evidence, be a candidate for a plural that adjoins to QP, but more conclusive evidence for this possibility is left for further studies.

7. Conclusions

In this paper, I have presented novel distributional and interpretational evidence to argue that the ‘different’ syntactic behavior of the plural marker in Yucatec Maya can be explained by its syntactic position as adjoining to the level of DP in the nominal phrase. For the well-known languages of Hebrew and Romance languages, plural morphology heads the functional projection #P, but this is not the case for all languages. In the syntactic typology of plural marking, it has been shown that plural morphology can merge at the level of the DP (Yucatec Maya in this paper) and at the $\sqrt{\text{root}}$ level (Halkomelem (Wiltschko, 2008)). This paper provides support for the observation that identity of meaning does not imply categorial identity (Wiltschko, 2008). This paper also adds to a growing body of research that targets the syntax as the locus of explanation for cross-linguistic variation in nominal morphosyntax and nominal denotation (Cheng & Sybesma (1999); Li (1999); Chung (2000); Kwon and Zribi-Hertz (2004); Sato (2008); Gebhardt (2009, inter alia), c.f. Chierchia (1998))

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