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

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1

Abstract

In some languages, plural marking is optional and non-inflectional. This type of plural marking has not been closely investigated from the perspective of formal generative theories of grammar. While plural morphology is generally taken to head the Number Phrase in many languages (Bernstein, 1991; Carstens, 1991; Delfitto and Schroten, 1991; Picallo, 1991; Ritter, 1991, 1992; Valois, 1991), this may not be the case for all languages. Wiltschko (2008) proposed a syntactic typology of plural marking by which languages can vary in where and how plural morphology merges. Wiltschko provides evidence that plural morphology in Halkomelem merges as an adjunct to an acategorial root. In this paper, I examine the properties of optional, non-inflectional plural marking in Yucatec Maya to argue that the plural marker merges as an adjunct to the DP. This language type is predicted by Wiltschko's typology, but this type has not been demonstrated before within the parameters outlined by Wiltschko (2008). I provide new diagnostics for the DP-adjoined plural language type in the syntactic typology of plural marking. This paper provides further support for the generalization that identity of function (in this case, pluralization) does not imply identical syntax (head of the Number Phrase), as discussed by Wiltschko (2008, 2011).

1   Introduction

In many better-known languages, the use of plural marking is required on all countable nouns that refer to a plurality. In this type of language, number concord in the noun phrase and number agreement on the verb are also obligatory. Plural marking is not universally inflectional, however, as a wealth of data from typological studies shows (Corbett, 2000; Mithun, 1999). There have been few formal syntactic treatments of this type of non-inflectional plural marking (but see Deprez (2005); Ghomeshi (2003); Gillon (in prep.); Kwon and Zribi-Hertz (2004); Kramer (2009); Li (1999); Park (2008); Wiltschko (2008)). In better-known inflectional plural languages, plural morphology is generally taken to head the Number Phrase, across languages (Bernstein, 1991; Carstens, 1991; Delfitto and Schroten, 1991; Picallo, 1991; Ritter, 1991, 1992; Valois, 1991). Wiltschko provides evidence, however, that plural morphology in Halkomelem merges as an adjunct to the acategorial root. Wiltschko also proposes a typology of plural marking along which the syntax of plural marking can vary in terms of how and where plurals merge. In this paper, I examine the properties of optional, non-inflectional plural marking in Yucatec Maya to conclude that the plural marker merges as an adjunct to the DP. This language type is predicted by Wiltschko's typology, but has not yet been demonstrated within the parameters established by Wiltschko. I provide new diagnostics for the DP-adjoined plural language type in the syntactic typology of plural marking. The con-

clusion drawn in this paper provides further support for the generalization that identity of function (in this case, pluralization) does not imply identical syntax (head of the Number Phrase), as discussed by Wiltschko (2008, 2011).

In Section 2, I discuss the syntax of plural marking, starting with arguments for plural morphology as the head of the Number Phrase. Then, I introduce Wiltschko's (2008) syntactic typology of plural marking, which allows variation in how and where plural morphology may merge along the spine of the DP. Then, in Section 3, I present the basic properties of plural marking in Yucatec Maya, and I discuss other DP constituents and the structure of the DP that I assume for the language. Following that, in Section 4, I apply the diagnostics of Wiltschko (2008) to the data on plural marking in Yucatec Maya. I provide evidence that the plural morpheme in Yucatec Maya does not merge at the root, as Wiltschko argues for Halkomelem, and I provide evidence that the plural morpheme in Yucatec does not merge at the NumP. I discuss additional syntactic and semantic properties that support the analysis of the plural morpheme in Yucatec as adjoined to the DP and that may be used as diagnostics for other potential DP-plural languages.[1]

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[1]The abbreviations I use in this paper are: A1 - first person set A cross-reference marker, A2 - first person set A cross-reference marker, A3 - third person set A cross-reference marker, ADJ - adjectival, AG - agentive, AN - animate, B1 - first person set B cross-reference marker, B2 - first person set A cross-reference marker, B3 - third person set B cross-reference marker, CL - classifier, D1/PROX - proximate deictic marker, D2/DIST - distal deictic marker, DEF - definite determiner, FEM - feminine, GER - gerund, IMPF - imperfective, IN - inanimate, IND - indicative, INSTR - instrumental, IP - inalienable possession, IRREG - irregular form, LOC - locational, MASC - masculine, N - noun, NEG - negation, NM - numeral, NOML - nominalizer, NOM - nominative case, OM - object marker,
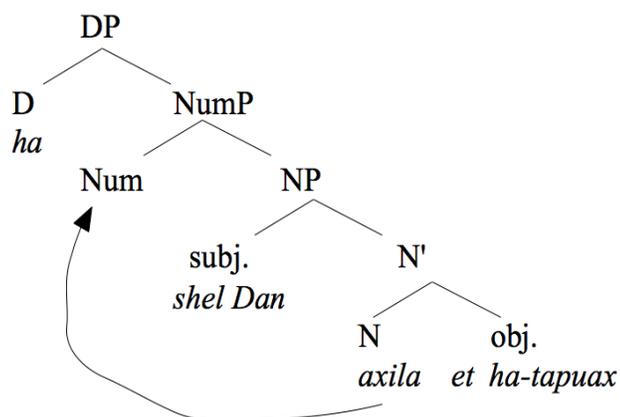
2 The syntax of plural marking

Since the advent of the DP-hypothesis (Abney (1987), building on work by Brame (1982); Kornfilt (1984); Reuland (1983); Szabolcsi (1983)), the crosslinguistic investigation of the structure of the Determiner Phrase has led to the proposal that the functional projection Number Phrase (NumP or #P) dominates dominates the NP (or nP) and is dominated by the Determiner Phrase (or DP) (Bernstein, 1991; Carstens, 1991; Delfitto and Schroten, 1991; Picallo, 1991; Ritter, 1991, 1992; Valois, 1991). The NumP contains the feature [± PLURAL] and houses plural morphology. The Number Phrase is proposed to be the landing site for noun movement in languages with prenominal adjectives, like Romance (e.g. Bernstein 1991, Picallo 1991, Valois 1991). And, the Number Phrase has been argued to be necessary to account for word order in the Hebrew construct state genitive noun phrase (Ritter 1991). If we assume an underlying subject-noun-object order, the construct state genitive in (1) must involve movement of the noun to a projection between the DP and NP in order to derive the surface order noun-subject-object, as shown in the tree in (2).

PL - plural, PROG - progressive aspect, PST - past, REFL - reflexive, REG - regular form, REL - relational, SG singular, TOP - topic marker, TRANS - transitive.

(1) ha-axila   shel Dan et ha-tapuax
    the-eating of   Dan of the-apple
    'Dan's eating of the apple' (Ritter, 1991, 39)

(2) N-to-Num movement in Hebrew (Ritter, 1991)

```
            DP
          /    \
        D      NumP
        ha    /    \
           Num      NP
                   /    \
               subj.     N'
               shel Dan /   \
                      N      obj.
                      axila  et ha-tapuax
```

This proposal has received crosslinguistic support from a range of languages including Hebrew (Ritter, 1995) and Romance (Bernstein, 1991), among others. There is evidence, however, that this proposal that the plural is the head of the Number Phrase, may not account for the properties of plural marking in other languages (Deprez, 2005; Ghomeshi, 2003; Gillon, in prep.; Kramer, 2009; Kwon and Zribi-Hertz, 2004; Li, 1999; Wiltschko, 2008). Wiltschko (2008) proposes a syntactic typology of plural marking in which plural marking can vary by two main parameters: 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 2.1. Also, plural morphology can be merged at various levels of the DP, including DP, NumP, nP and $\sqrt{}$root, outlined in Section 2.2. In the next sections, I

outline the details of Wiltschko's syntactic typology of plural marking.

2.1   How plurals merge

The first parameter by which languages can vary in Wiltschko's typology of plural marking is how plurals merge. A plural can merge as the head of a phrase, in which case, it merges with a noun and creates a new syntactic object which bears its label (Num rather than n), as shown in (3).[2] Then, in inflectional plural languages, D selects for Num, rendering its presence obligatory. This is the case for languages such as English and Spanish in which number marking is obligatory.

(3) Plural merges as head (adapted from Wiltschko (2008))
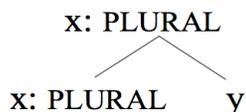
x: PLURAL

x: PLURAL   y

In other languages, a plural may merge as an adjunct, in which case it merges with a noun but does not have the ability to change the label of the new syntactic object formed by the merger of the noun and pluralizer. Thus, a plural which merges as an adjunct to a noun continues to bear the label of the noun, as shown in (4). In non-inflectional plural languages, then, D

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[2]I assume, following Wiltschko (2008); Hornstein and Nunes (2008); Sato (2010), that adjuncts are syntactic objects that merge without the ability to change the label of the item with which they merge. Hornstein and Nunes (2008) propose that specifiers and complements require concatenation and labeling, while adjuncts require only concatenation. A suggestion along these lines was also mentioned by (Wiltschko, 2008, footnote 13).

cannot select for plural, which results in the optionality of plural marking (Wiltschko, 2008).

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

```
          y
        /    \
  PLURAL      y
```
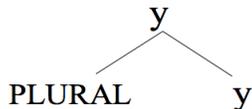
Wiltschko outlines two main diagnostics for a plural that merges as an adjunct, optionality and lack of agreement. In English, plural marking and number agreement are obligatory. Wiltschko provides evidence that in Upriver Halkomelem, plural marking is not obligatory. The example in (5a) shows that plural marking can be used on the noun in the phrase with the numeral three, but, the example in (5b) shows that plural marking is not obligatory.

(5)   a. te   lhíxw swóweles
          DET three boy.PL
          'the three boys'

    b. te   lhíxw swíweles
          DET three boy
          'the three boys' (Wiltschko, 2008, 642)

Similarly, number agreement is not obligatory. While the example in (6a) shows that plural marking on the determiner and noun is acceptable in Upriver Halkomelem, the examples in (6b) through (6d) show that the same phrase without plural marking on the determiner or noun are also felicitous.

8

(6) a. t'ílém ye s-í:wíqe
     sing DET.PL man.PL
     'the men are singing'

   b. t'ílém te s-í:wíqe
     sing DET man.PL
     'the men are singing'

   c. t'ílém ye s-íyeqe
     sing DET.PL man
     'the men are singing'

   d. t'ílém te s-íyeqe
     sing DET man
     'the men are singing' (Wiltschko, 2008, 643)

Wiltschko (2008) explains the mechanics of AGREE (Chomsky, 2000, 2001) in relation to plural marking as a head or adjunct as follows. In a language like English or Spanish with obligatory number agreement, there is an unvalued number feature on D. Since the unvalued feature on D must be valued in order to avoid crashing the derivation, it probes its domain for a matching feature, which it finds in Num. The feature on D will match the feature on Num, and spell-out will insert the exponent of D which best matches the feature bundle determined by AGREE. In a non-inflectional plural language in which the plural morpheme merges as an adjunct, however, this AGREE relation is not present. The co-variation of plural forms that arises, for example in (6a) above, comes to be by different means, not by AGREE. Wiltschko states that this proposal is compatible with the proposal that plural morphology is a syntactic adjunct in Halkomelem, since modifiers typically do not value unvalued features. Thus, there cannot be an unvalued feature on D because it cannot select Num, which would be necessary to value its unvalued

number feature (Wiltschko, 2008).

The typology of how plural morphology can merge, as a head or as a modifier, is summarized in (7).[3]

(7) How plurals merge (Wiltschko, 2008)

    a. HEAD MERGE: Plural merges with a noun and results in a new syntactic object which bears its label, Number

    b. ADJUNCT MERGE: Plural merges with a noun, but cannot change the label of the new syntactic object.

2.2 Where plurals merge

Wiltschko (2008) also proposes that plural morphology can vary across languages based on where the plural is merged along the spine of the DP. In the well-established cases of Hebrew, English and Romance, plurals merge as the head of the Number Phrase (Ritter, 1995; Embick and Noyer, 2007; Bernstein, 1991). Wiltschko (2008) shows that in Upriver Halkomelem, however, plural morphology merges as an adjunct to the acategorial root ($\sqrt{}$). The main evidence for this proposal is that plural morphology in Halkomelem can occur inside of compounds and inside of derivational morphology. The

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[3]The property of plural marking that it can merge as a head or an adjunct is not unique to plural marking. It is reminiscent of the syntax of negation. I thank Heidi Harley for mentioning this to me. Negation has also been shown to merge as a head or an adjunct (Hankamer, 2011; Zanuttini, 1996, 1997). This was also noted by Wiltschko (2008) in footnote 41, who also mentions that diminutives and evidentials show the same head/adjunct paramerization. See also Deschaine and Wiltschko (2003) for this property of negation, Blain and Deschaine (2007) for evidentials and Steriopolo (2008) for diminutives.

example in (8) shows that the plural occurs inside of the compound, and interestingly, the plural does not refer to the number of chipmunks (modifying the compound as a whole), but rather to the number of stripes on the back of the chipmunk (modifying just the first noun).

(8) s-xexp'-í:tsel
NOM-stripe.PL-back
'chipmunk (with more than two stripes' (Wiltschko, 2008, 644) data from (Galloway, 1980, 63)

The examples in (9) through (11) show that the reduplicative plural *-p'eq* in (11) ignores the presence of the derivational nominalizer *s-*, shown along in (10).

(9) p'-eq'
white
'white'

(10) s-p'eq'
NOM-white
'white spot on skin'

(11) s-**p'eq'**-p'eq' (*sp'eq'sp'eq')
NOM-white.PL
'white spots on skin' (Wiltschko, 2008, 645) data from (Galloway, 1993, 379)

Based on these main observations, Wiltschko proposes that the plural marker in Halkomelem merges to an acategorial root. The tree in (12) below

has arrows on the left which indicate the points at which a plural morpheme could potentially merge along the spine of the DP, based on Wiltschko's (2008) typology (Wiltschko uses the symbol # to refer to the Number projection).

(12) Where plurals merge (adapted from Wiltschko (2008))

```
        DP
      /    \
→ D         #P
          /    \
      → #        nP
              /    \
          → n
              → √root
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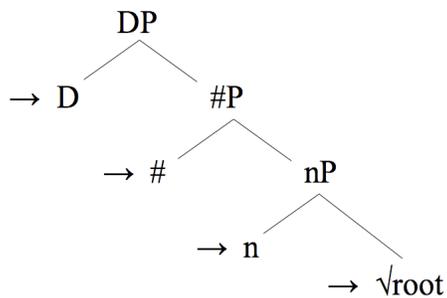
So far, we have assumed that in a number of well known languages, such as Hebrew, English and Romance, the plural heads the functional #P, following a wealth of literature to support this idea. Wiltschko (2008) presents evidence that in Halkomelem the plural merges as an adjunct to the root. In the next section, Section 3, I lay out the basic properties of plural marking DP in Yucatec Maya, and I discuss other DP constituents and the structure of the DP that I assume for the language. Then, in Section 4, I apply the diagnostics of Wiltschko (2008) discussed in this section to the facts of plural marking in Yucatec Maya.

3 Plural marking in Yucatec Maya

3.1 Non-obligatory

In better-known languages such as English, and Spanish, the grammar forces a singular or plural form on every count noun in the language. Plural marking is required for the noun phrase to be interpreted as referring to a plurality. The noun phrase in Spanish in (13) shows a noun in singular form which can only be interpreted as referring to a singular girl (or to a kind). The noun phrase in (14) can only refer to a single girl, not to more than one.

(13) la   muchach-a
     DEF.FEM.SG girl-FEM.SG
     'the girl' / NOT: 'the girls'

(14) las   muchach-as
     DEF.FEM.PL girl-FEM.PL
     'the girls' / NOT: 'the girl'

In Yucatec Maya, however, the presence of plural morphology in the noun phrase is not necessary for a noun to be interpreted as referring to a plurality. In the noun phrase in Yucatec Maya in (15), the noun does not have plural morphology and can be interpreted as referring to either a single girl or more than one.

(15) le   x-ch'úupal-o'
     DEF FEM-girl-D2
     'the girl (there)' / 'the girls (there)'

When the noun phrase has the plural morpheme -*o'ob*, as in (16), it must refer to more than one girl, and it can no longer refer to a single girl.

(16) le   x-ch'úupal-o'ob-o'
     DEF FEM-girl-PL-D2
     'the girls (there)' / NOT: 'the girl (there)'

This type of number marking just described for Yucatec Maya is common cross-linguistically. Corbett (2000) refers to a noun that is morphologically unmarked for number but can refer to a plurality as having "general number." Wiltschko (2008) notes that there are very few formal treatments of this non-inflectional type of plural marking (but see (Deprez, 2005; Ghomeshi, 2003; Kwon and Zribi-Hertz, 2004; Li, 1999)), and that the question of the formal representation of non-inflectional plural marking (how it is set apart from inflectional plural marking) is an important one which relates to how we determine if a particular form instantiates a functional head or not (Wiltschko, 2008, 640).

3.2 No agreement

In many well-known languages, number concord and agreement are required in order for a sentence to be grammatical. The example in (17) in Spanish shows that the grammar requires concord for number within the noun phrase as well as agreement between the noun and the verb. In the example in (17a), the determiner and noun match in plural form along with the noun

and the verb. The example in (17b), however shows that a sentence in which the determiner is in the plural form while the noun is in the singular form is ungrammatical. Likewise, the example in (17c) shows that a singular determiner with a plural noun is ungrammatical, even if the noun and verb match, both having a plural form. Finally, the example in (17d) shows that even if there is concord between the determiner and noun with both in the plural form, the sentence is ungrammatical because the plural form of the noun does not match the singular form of the verb.

(17)   a. Las   muchach-as est-án   cant-ando
          DEF.FEM.PL girl-FEM.PL be-PROG.3.PL sing-GER
          'The girls are singing.'

       b. *Las   muchach-a est-án   cant-ando
          DEF.FEM.PL girl-FEM.SG be-PROG.3.PL sing-GER
          'The girls are singing.'

       c. *La   muchach-as est-án   cant-ando
          DEF.FEM.SG girl-FEM.PL be-PROG.3.PL sing-GER
          'The girls are singing.'

       d. *Las   muchach-as est-á   cant-ando
          DEF.FEM.PL girl-FEM.PL be-PROG.3.SG sing-GER
          'The girls are singing.'

Number concord within the noun phrase and agreement between the nominal and verbal constutuents is obligatory in Spanish. In Yucatec Maya, however, number concord within the noun phrase is not obligatory. As we saw in examples (15) and (16) in Yucatec, the determiner has the same form regardless of whether the noun is marked with plural morphology or not.

There is no plural form of the definite determiner *le*. There is no obligatory number concord between an adjective and noun in Yucatec Maya either. The example in (18) shows that a noun phrase with a prenominal adjective and a plural noun does not require the adjective to have plural morphology.

(18) le   ki'ichpam x-ch'úupal-o'ob
     DEF pretty   FEM-girl-PL
     'the pretty girls'

In fact, plural marking on a prenominal adjective is judged by native speakers as ungrammatical, as shown in (19). When the adjective is in postnominal position, however, as in (20), it can take the plural marker, a curious fact that has a natural explanation under the DP-adjoined plural hypothesis for Yucatec Maya. This will be discussed in in Section 4.3.

(19) *le ki'ichpam-o'ob x-ch'úupal-o'ob
     DEF pretty-PL   FEM-girl-PL
     'the pretty girls'

(20) le   x-ch'úupal-o'ob-o' ki'ichpam-o'ob
     DEF FEM-girl-PL-D2   pretty-PL
     'the pretty girls'

Yucatec Maya is a predicate-initial language, but other constituent orders are possible by fronting of a full DP for topic or focus (Bricker, 1979; Bohnemeyer, 2002). Number agreement between nouns and verbs in Yucatec Maya

is not obligatory, at least not for the predicate-initial sentences presented here.[4]

(21) Táan u   k'aay le   x-ch'úupal-o'
     PROG A3 sing   DEF FEM-girl-D2
     'The girl is singing.' / 'The girls are singing.'

The noun phrase can be marked with plural morphology, and there is no requirement for the verb phrase to covary in form. The example in (22) shows that the noun phrase can be plural-marked while the verb phrase is not. A sentence with plural morphology on the noun and verb, as in (23), is also acceptable.[5]

(22) Táan u   k'aay le   x-ch'úupal-o'ob-o'
     PROG A3 sing   DEF FEM-girl-PL-D2
     'The girls are singing.'

(23) Táan u   k'aay-o'ob le   x-ch'úupal-o'ob-o'
     PROG A3 sing-PL   DEF FEM-girl-PL-D2
     'The girls are singing.'

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[4]Covariation of plural form between the noun and verb of an intransitive clause is significantly more likely for SV clauses than for VS, based on experimental results presented by Butler et al. (2011). See Butler (2011) for details. I remind the reader that covariation of plural form does not necessarily mean that a formal AGREE relation has been established, as discussed in Section 2.1.

[5]The third person plural cross-reference suffix, -o'ob, on the verb is homophonous with the nominal plural marker -o'ob. This homophony is curious, and the syntax of the nominal plural as adjoined to the DP may be related to its use in the verbal domain. See Butler (2011) for some discussion, but a more in depth analysis of the properties of third person plural cross-reference marking are needed. Throughout the paper, when I use the term "plural", I refer to the nominal plural marker.

A sentence with a plural-marked verb but no plural marking on the noun is grammatical as well for the DP-final clause in (24).

(24) Táan u   k'aay-o'ob le   x-ch'úupal-o'
     PROG A3 sing-PL   DEF FEM-girl-PL-D2
     'The girls are singing.'

We have seen that plural marking in Yucatec Maya differs from better known languages in which plural marking is inflectional and agreement is obligatory, such as Spanish. In the next section, I outline the distribution of the plural marker with respect to other constituents in the DP in order to set the stage for the main arguments for the nominal plural as adjoined to the DP in Yucatec Maya.

3.3   Basic DP constituents in Yucatec Maya

In this section, I discuss the distribution of the plural marker with respect to other constituents in the Determiner Phrase. Here, I describe the co-occurrence of the plural marker with the determiner, the phrase-final deictic particles and numeral classifiers. Then, I outline my assumptions regarding the syntax of these constituents in order to set the stage to show that the plural marker in Yucatec Maya is adjoined to the DP.

18

3.3.1 Determiner

The plural marker in Yucatec Maya can co-occur with the definite determiner, as in example (25), and the definite determiner can occur without the plural, as in (26). Likewise, the plural marker can occur without the determiner as in (27) and (28).

(25) le   x-ch'úupal-o'ob
     DEF FEM-girl-PL
     'the girls'

(26) le   x-ch'úupal
     DEF FEM-girl
     'the girl' / 'the girls'

(27) x-ch'úupal-o'ob
     FEM-girl-PL
     'girls'

(28) kaax-o'ob
     chicken-PL
     'chickens' (Tec-Tun et al., 2003, 184)

When the plural marker occurs without a definite determiner, it results in a generic or kind interpretation. The bare plural nouns in (29) and (30) refer to the generic noun "red hammocks" or to a kind "women."

(29) Juan-e'   k-u-meent-ik   chak k'áan-o'ob
     Juan-TOP IMPF-A3SG-do red   hammock-PL
     'As for Juan, he makes red hammocks.' (Tonhauser, 2009, 4)

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

3.3.2 Phrase-final particles

The plural morpheme -*o'ob* in Yucatec can be used with any of three phrase-final particles that occur in the final position of the noun phrase. The phrase-final particles include the distal decitic marker -*o'*, shown in (31), the proximal deictic marker -*a'*, shown in (32), and the topic marker -*e'*, shown in (33). The plural marker can co-occur with any of these phrase-final particles.[6]

(31) le x-ch'úupal(-o'ob)-o'
  DEF FEM-girl(-PL)-D2
  "the girls (there)"

(32) le x-ch'úupal(-o'ob)-a'
  DEF FEM-girl(-PL)-D1
  'the girls (here)'

(33) le x-ch'úupal(-o'ob)-e'
  DEF FEM-girl(-PL)-TOP
  'as for the girls'

  The phrase-final particles can occur without plural morphology as well, as indicated by the optionality of the plural morpheme in the examples above. I return to the syntax of these elements in Section 3.3.4.

3.3.3 Classifiers

In Yucatec Maya, numeral classifiers are obligatory in noun phrases which are being counted. Numeral classifiers are suffixes which attach to the numeral

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[6]The phrase-final particles are glossed by Yucatec Mayanists as D2 - distal deictic particle, D1 - proximal deictic particle and D3/TOP - topic particle.

and precede the noun. For numbers higher than three or four, speakers of Yucatec typically borrow Spanish numerals, which do not take numeral classifier suffixes (though a Spanish numeral can occur as the predicate in a possessive numeral classifier construction, as in example (40), which I discuss shortly).[7] There are three very common classifiers, -*túul* is used to count animate entities, -*p'éel* is used for counting inanimate entities (also used as a general classifier, even with animate noun phrases), and -*kúul* is used for counting for plants. There are over 250 different classifiers in Yucatec which have been documented by Miram (1983) and Briceño Chel (1993). Some classifiers are mensuratives, and many indicate the shape or material of the nominal referent. The most relevant property of classifiers for the current analysis is that classifiers can co-occur with the nominal plural marker -*o'ob*.[8]

The example in (34) shows the plural morpheme -*o'ob* co-occurring with the animate classifier.[9] The examples in (35) and (36) are from Yucatec narratives and also show the co-occurrence of plurals and numeral classifiers.[10]

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[7]The fact that borrowed Spanish numerals do not take Yucatec numeral classifiers supports the idea that the function of the numeral classifier is not to support some aspect of the noun but rather the numeral, as has been argued for Yucatec numeral classifiers (Lehmann, 2008). This idea also complements the syntax of the numeral and classifier assumed in Section 3.3.4.

[8]Some scholars of Yucatec have claimed that plural marking and classifiers cannot co-occur (e.g. Lucy (1992); Pfeiler (2009)), but other scholars (cf. (Allan, 1977; Briceno-Chel, 1993)) and I have found evidence from various data sources, including elicitation, narratives and experimental data that the two do, in fact, often co-occur in Yucatec (Butler (2011)).

[9]These examples do not appear to be partitives since in Yucatec the partitive requires a definite determiner between the numeral-classifier and noun, e.g. *ka'a-túul **le** x-ch'úupal-o'ob* (two-CL.AN DEF FEM-girl-PL) 'two of the girls.' I thank Scott AnderBois for this question.

[10]I thank Judith Aissen for the suggestion to look for examples in narratives.

(34) ka'a-túul   x-ch'úupal-o'ob
two-CL.AN FEM-girl-PL
'two girls'

(35) óox-p'éel   ja'ab-o'ob
three-CL.IN year-PL
'three years' (Blair and Vermont-Salas, 1967, 454)

(36) le   óox-p'éel   siidra-o'ob-o'
DEF three-CL.AN cider-PL-D2
'the three ciders' (Andrade and Máas-Collí, 1999, 216)

Plural morphology and classifiers have been predicted not to co-occur due to their shared function of individuation (Borer, 2005; Chierchia, 1998; Greenberg, 1963; Sanches and Slobin, 1973). However, there is a wealth of evidence that this position is far too rigid (Chung, 2000; Deprez, 2005; Sato, 2008, *inter alia*) and see (Chierchia, 2010). Classifiers co-occur with plural morphology in other Mayan languages as well. In Jakaltek Maya, for example, the plural morpheme co-occurs with numeral and noun classifiers. The example in in (37) shows that plural morpheme *heb'*, which used for nouns referring to humans, co-occurs with the numeral classifier *waň* as well as the noun classifier *naj*. Likewise in (38), the plural morpheme *hej*, used for nouns referring to animals, co-occurs with the numeral classifier *c'oň* and the noun classifier *noʔ*.[11]

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[11]Another interesting aspect of Jakaltek grammar is that there are numeral classifiers as well as noun classifiers which co-occur along with plural marking. I leave this for future research.

22

(37) ca-waǐ   heb'   naj   winaj
     2-CL.NM.HUMAN PL.HUMAN CL.N.MAN man
     "the two men"

(38) ca-c'oǐ   (hej)   no7   nok'
     2-CL.NM.ANIMAL PL.ANIMAL CL.N.ANIMAL animal
     "the two animals" (Craig, 1986, 15)

Plural marking and classifiers co-occur in Halkomelem as well. Wiltschko (2008) argues that because the plural marker in Halkomelem does not merge as the head of the Number Phrase, it can co-occur with classifiers, since plural marking and classifiers instantiate different syntactic categories in some languages. In Halkomelem, the plural merges at the root, while classifiers are generally assumed to merge as the head of the Number Phrase (though see Wiltschko (2008) for discussion that classifiers in Halkomelem may not reside in Num). If the DP-adjoined analysis of the plural in Yucatec Maya is correct, it provides another way in which a language could allow plural marking with classifiers.[12] I discuss this in more detail in Section 4.

3.3.4 The basic structure of the DP in Yucatec Maya

For Yucatec, I will assume that the definite determiner heads the DP (Abney, 1987). I will assume the numeral classifier heads a Classifier Phrase (ClP) (Cheng and Sybesma, 1999; Li, 1999; Pan, 1990; Tang, 1990) with the numeral in its specifier. And, I will assume that the phrase-final particle resides

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[12]Gebhardt (2009) presents data from Persian which provide yet another way in which plurals and classifiers can co-occur. He argues that Persian has both a Number Phrase and a Classifier Phrase.

in a functional projection which dominates the DP. I give some justification for these assumptions underlying the syntax of the numeral classifiers and phrase-final particles in the next paragraphs.

In Yucatec, numeral classifiers are obligatory when a noun is enumerated. Numeral classifiers combine with some quantificational elements in Yucatec Maya. The example in (39) shows that the classifier is obligatory with the quantificational adverbial question word 'how many.'

(39) Jay-*(túul)   péek' yaan waye'?
     how.many-CL.AN dog   exist there
     'How many dogs are over there?'

Under the analysis that numeral classifiers are heads of an independent functional projection, they would be predicted to occur in bare classifier-noun DPs, as they do in Mandarin (Cheng and Sybesma, 1999).[13] In Yucatec Maya, however, bare classifier-noun phrases are not grammatical. They are restricted to contexts of counting. Numeral classifiers can, however, occur without a prefixed numeral in a possessive construction with a Spanish numeral as the predicate, as shown in (40).

(40) Ocho u   túul-ul   in w-íits'in-o'ob
     eight A3 CL.AN-REL A1 younger.brother-PL
     'My younger brothers are eight.' (Briceno-Chel, 1993, 164)

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[13]I thank an anonymous *Lingua* reviewer for bringing up this point.

This assumption that the classifier heads a Classifier Phrase which includes the numeral in the specifier follows the single-head analysis of numerals and classifiers (Kawashima, 1994; Muromatsu, 1998), but the exact position of the numeral and classifier is a complex issue to be taken up in future research. The current assumption does not affect the DP-adjoined analysis of the plural. It is, however, important for the question of whether Yucatec Maya lacks a Number Phrase completely.[14] Under the assumptions I have outlined here, it is possible that Yucatec lacks a Number Phrase entirely. The fact that Yucatec may lack a Number Phrase entirely would be a natural explanation for why the plural merges elsewhere.

The syntax of the phrase-final deictic particles in Yucatec Maya is perhaps less obvious. The phrase-final particles occur at the end of the noun phrase. The clause in (41) in which the noun *xi'ipal*, "boy", is marked with the distal deictic particle is interpreted as the subject/agent of the clause. With a relative clause modifier, as shown in (42), the deictic particle occurs after the modifier.

(41) Le   xi'ipal-**o'** k-u   jaant-ik ja'as
     DEF boy-D2   IMPF-A3 eat-INC banana
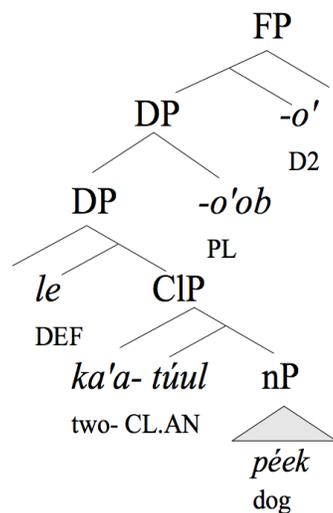   'The boy (there) is eating bananas.'

(42) Le   xi'ipal k-u   jaant-ik ja'as-o'
     DEF person IMPF-A3 eat-INC banana-D2
     'the boy who is eating bananas'

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[14]I thank an anonymous reviewer for emphasizing the importance of this question.

Since the phrase-final particle follows the noun and modificational material, I will assume that it heads a functional projection, which I simply label FP for the current purposes, that dominates the entire DP (perhaps similar to the syntax of the KaseP in case-marking languages (Lagmontagne and Travis, 1986; Loebel, 1994). The structure in (43) diagrams the syntax of the basic constituents of the DP in Yucatec Maya. To sum, I assume that the noun, when enumerated, selects a classifier phrase with the cardinal numeral in its specifier and the classifier as its head. The Classifier Phrase selects the Determiner Phrase, which is headed by the definite determiner. And, the plural marker, as I will argue throughout the remainder of the paper, is adjoined to the DP. The DP selects the FP which is headed by the phrase-final particle.

(43) Structure of Yucatec Maya Determiner Phrase

```
                         FP
                        /  \
                     DP      -o'
                    /  \       D2
                 DP     -o'ob
                /  \       PL
              le    ClP
             DEF   /   \
            ka'a- túul   nP
            two- CL.AN  /\
                      péek
                      dog
```

Given the Mirror Principle (Baker, 1985), there are some morpheme order

facts in the structure in (43) that need to be explained. I am assuming that the plural morpheme *-o'ob* is right-adjoined and does not conform to the assumptions of antisymmetry (Kayne, 1994). I follow Harley (2010) in assuming that some morphemes can be specified as right- versus left-adjoining. The assumption that the plural morpheme *-o'ob* is right-adjoined seems necessary in order to derive the morpheme order facts of the language (especially given that the plural is not the head of its own functional projection and thus cannot be involved in affixation via successive cyclic head movement). I assume that the classifier and numeral affix by the post-syntactic operation of Merger Under Adjacency (Halle and Marantz, 1993; Bobaljik, 1994; Harley, 2010). The FP of which the phrase-final particle is the head is right-headed (as shown in (43)), but it is also possible to derive the linear order by phrasal movement of the DP to the left-branching FP.

Now that I have outlined some assumptions about the syntax of the basic DP constituents in Yucatec Maya, I turn to an outline of the syntactic typology of plural marking (Wiltschko, 2008). Then, I use the diagnostics proposed by Wiltschko to show that the plural morpheme in Yucatec Maya is an adjoined syntactic modifier. I present additional syntactic and semantic evidence that the plural morpheme in Yucatec is adjoined to the DP.

27

4 The plural in Yucatec as DP-adjoined

4.1 The Yucatec plural merges as an adjunct

The first parameter outlined by Wiltschko (2008) by which the syntax of plural marking can vary is how the plural is merged, as a head or an adjunct. The plural morpheme in Yucatec appears to by the type that merges as an adjunct, without the ability to change the label of the syntactic object formed when it merges with a noun. Wiltschko proposes two main diagnostics for adjunct merge: 1) optionality and 2) lack of agreement. Yucatec Maya shows both of these properties. The nominal plural morpheme -*o'ob* is not obligatory for a plural interpretation to result, as we saw in Section 3.1. The example in (15), which is repeated here as (44), shows that plural marking is not necessary for a noun to be interpreted as referring to a plurality. In other words, the absence of plural morphology does not imply singularity.

(44) le   x-ch'úupal-o'
     DEF FEM-girl-D2
     'the girl (there)' / 'the girls (there)'

In contrast, in Spanish, a noun must be marked for plural in order to be interpreted as referring to a plurality, and the absence of a plural marker results in a singular interpretation, as was shown in (13) and (14), repeated here as (45) and (46).

(45) la   muchach-a
     DEF.FEM.SG girl-FEM.SG
     'the girl' / NOT: 'the girls'

(46) las   muchach-as
     DEF.FEM.PL girl-FEM.PL
     'the girls' / NOT: 'the girl'

In addition, neither number agreement nor number concord are obligatory in Yucatec, as we saw in Section 3.2. In Yucatec, there is no obligatory agreement between the verb and noun. If covariation of plural form on the noun and verb does obtain, it is not derived via the AGREE operation, as discussed in Section 2.1.

(47) Táan u k'aay(-o'ob) le   x-ch'úupal(-o'ob)-o'
     PROG A3 sing(-PL)   DEF FEM-girl(-PL)-D2
     'The girls are singing.'

In contrast, in Spanish, number agreement between the noun and verb is obligatory, as shown in (17a through d), two of the examples repeated here as (48a and b).

(48)   a. Las   muchach-as est-án   cant-ando
       DEF.FEM.PL girl-FEM.PL be-PROG.3.PL sing-GER
       'The girls are singing.'

      b. *Las   muchach-as est-á   cant-ando
       DEF.FEM.PL girl-FEM.PL be-PROG.3.SG sing-GER
       'The girls are singing.'

Thus, we can conclude, according to the diagnostics outlined in Wiltschko (2008), that the plural morpheme in Yucatec does not merge as a head but rather as an adjoined syntactic modifier. This adjunct does not have the potential to change the syntactic label of the constituent with which it merges. Its formal syntactic properties are distinct from the plural marker in Spanish. In the next sections, I examine the distributional properties of Yucatec with respect to Wiltschko's diagnostics for the plural merging at the root in Halkomelem. I show that the plural marker in Yucatec does not merge at the root, and then I outline some arguments for merge at the level of the DP.

4.2   The Yucatec plural does not merge at the $\sqrt{}$root

Wiltschko provides evidence that the plural morpheme in Halkomelem merges at the root. The main pieces of evidence are that: 1) the plural occurs inside of compounds and 2) the plural marker occurs inside of derivational morphology. The plural morpheme in Yucatec does not merge with the root. It can only occur outside of noun-noun compounds, shown in (50), and it cannot occur inside of the noun-noun compound shown in (49).[15]

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[15]An anonymous review points out that plural morphology can occur between noun-noun compounds in Italian (e.g. *Capi mafia* 'master.*pl* mafia' "mafia bosses" and *Casse panche* 'box.*pl* banch.*pl*' (a type of furniture). Compounds of this type are also possible in English, for example *sports-complex*. Wiltschko (2008, 677) analyzes plural marking inside compounds in Halkomelem as a case of phrasal compounding (I thank an anonymous reviewer for pointing this out).

(49) le   pol-ch'oom-**o'ob**-o'
     DEF head-village-PL-D2
     'governors'

(50) *le   pol-**o'ob**-ch'oom-o'
     DEF head-PL-village-D2
     'governors'

Yucatec Maya is not a language that makes extensive use of derivational morphology. Lois and Vapnarksy (2003) consider roots in Yucatec Maya to be highly underspecified for lexical category. Intransitive unergative roots require no derivation to be used as nominals. Intransitive unaccusative roots take an inflectional suffix which is also used with verbs. Transitive roots can undergo noun incorporation, antipassivization or anticausativization to become nominal (Bohnemeyer, 2009). Antipassivization and anticausativization do not involve concatenative morphology. They involve supra-segmental changes to the root vowel.

Nonetheless, there are some examples of nominal derivational morphology which show that the plural morpheme cannot occur inside of it. The plural morpheme cannot occur inside of the instrumental suffix in Yucatec, as shown in (52), but when the plural suffix follows the instrumental suffix, the resulting phrase is grammatical, as in (53).

(51) x-muk-ub
     AG-bury-INSTR
     'shovel' (Bricker et al., 1998, 365)

(52) *x-muk-o'ob-ub
AG-bury-PL-INSTR
'shovels'

(53) x-muk-ub-o'ob
AG-bury-INSTR-PL
'shovels'

In fact, the instrumental suffix must appear closer to the root because the vowel of the suffix undergoes vowel harmony (or more accurately, complete vowel echo), to match the vowel of the root (contrast (51) above with (54) below). Assuming that this type of contextual allomorphy is strictly local (e.g. as in Embick (2010)), we would predict that no constituent would interfere between the root and instrumental suffix.

(54) x-tsaj-ab
AG-fry-INSTR
'frying pan' (Bricker et al., 1998, 365)

In addition, some inalienably possessed nouns require the suffix -el, which I will gloss IP for "inalienable possession." The example in (55) shows the IP suffix. The example in (56) shows that the plural morpheme cannot occur inside of the inalienable possession suffix. And, the example in (57) shows that the plural suffix occurring outside of the inalienable possession suffix is grammatical.

(55) in b'aak-el
     A1 bone-IP
     'my bone' (Bricker et al., 1998, 359)

(56) *in b'aak-o'ob-el
     A1 bone-PL-IP
     'my bones'

(57) in b'aak-el-o'ob
     A1 bone-IP-PL
     'my bones'

I take these facts as evidence that the plural morpheme occurs higher than other nominal derivational morphology, such as that which marks inalienable possession and instrument-hood.

Wiltschko (2008) discusses additional evidence that the plural morpheme in Halkomelem adjoins at the $\sqrt{}$root. When it combines with a root which then merges with a verbalizing head, it results in the interpretation of a pluractional event, as in (58). When it combines with an adjective, the resulting meaning is an intensification of the property, as in (59).

(58) qw'óleqw-et
     whip.PL-TRANS
     'whip something/someone several times' (Wiltschko, 2008, 679)

(59) tsméth'-meth'
     blue.PL
     'very blue' / 'lots of blue' (Wiltschko, 2008, 680)

33

This is not the case in Yucatec, however. The plural morpheme -*o'ob* can combine with verbs and adjectives, but when it does it co-references a third person plural argument. It does not result in a pluractional event, as shown in (60), nor does it intensify the property denoted by an adjective, as shown in (61).

(60) Táan u yáalkab-o'ob
PROG A3 run-PL
'They are running' / NOT: 'Running repeatedly'

(61) ki'-o'ob
delicious-PL
'They are delicious' /NOT: 'very delicious'

In the next section, I provide evidence that the plural morpheme in Yucatec does not merge at the Number Phrase.

4.3 The Yucatec plural does not merge at NumP

In addition to the evidence that the nominal plural -*o'ob* in Yucatec Maya does not merge at the $\sqrt{}$root, there is evidence that it, in fact, does not merge at the Number Phrase either. The evidence that the plural morpheme in Yucatec does not head the Number Phrase lies in its distribution in relation to prenominal adjectives. In Walloon, a language for which there is evidence that the plural morpheme heads the Number Phrase (Bernstein, 1991), the plural morpheme attaches to adjectives in prenominal position.
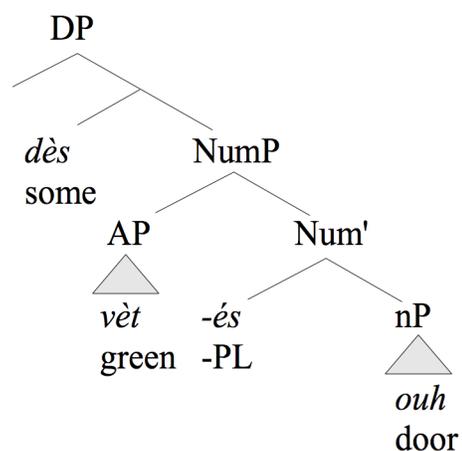
The examples in (62) and (63) show that the plural marker, which is underlined, attaches to the prenominal adjectves.

(62) dès   vèt<u>és</u>-ouh
     some green.PL-door
     'some green doors'

(63) dès   nêur<u>s</u>-ouy
     some black.PL-eye
     'some black eyes'

The tree in (64) shows that if we assume the position of the prenominal adjective to be in Spec NumP, while the plural marker is in NumP, then we have a natural explanation for the word and morpheme order facts of plural noun phrases in Walloon.

(64) Plural marking on prenominal adjective

```
                    DP
                   /  \
                  /    \
               dès     NumP
               some   /    \
                    AP      Num'
                    /\     /    \
                   /__\   -és    nP
                  vèt    -PL     /\
                  green        /___\
                               ouh
                               door
```

In Yucatec Maya the position of adjective is variable. Pre and postnominal adjectives are both possible in the language, though postnominal

35

adjectives may in fact be rediced relative clauses, since Yucatec lacks a relative pronoun and a copular verb (Bohnemeyer, pc.). If the plural marker heads NumP in Yucatec, we would predict that it could occur on a prenominal adjective, but, in fact, this configuration is ungrammatical. When an adjective is prenominal, it may not take plural marking, as shown in examples (65b) and (65d), regardless of whether the noun is also marked with plural morphology or not.[16]

(65)   a. le   ki'ichpam x-ch'úupal-o'
          DEF pretty   FEM-girl-D2
          'the pretty girl' / 'the pretty girls'

       b. *le   ki'ichpam-**o'ob** x-ch'úupal-o'
          DEF pretty(-PL)   FEM-girl-D2
          'the pretty girls'

       c. le   ki'ichpam x-ch'úupal-**o'ob**-o'
          DEF pretty   FEM-girl-PL-D2
          'the pretty girls'

       d. *le   ki'ichpam-o'ob x-ch'úupal-**o'ob**-o'
          DEF pretty(-PL)   FEM-girl-PL-D2
          'the pretty girls'

When the adjective is in postnominal position, however, plural marking on the adjective is felicitous, as shown in (66) below, whether or not the noun is marked with the plural morpheme. All of the examples in (66) are grammatical.

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[16]As would be predicted the phrase-final particle -*o'* cannot occur on a prenominal adjective either: **le ki'ichpam-o' x-ch'úupal* (DEF pretty-D2 FEM-girl).

(66) a. le   x-ch'úupal ki'ichpam-o'
          DEF FEM-girl   pretty-D2
          'the pretty girl' / 'the pretty girls'

      b. le   x-ch'úupal-**o'ob** ki'ichpam-o'
          DEF FEM-girl-PL   pretty-D2
          'the pretty girls'

      c. le   x-ch'úupal ki'ichpam-**o'ob**-o'
          DEF FEM-girl   pretty-PL-D2
          'the pretty girls'

      d. le   x-ch'úupal-**o'ob** ki'ichpam-**o'ob**-o'
          DEF FEM-girl-PL   pretty-PL-D2
          'the pretty girls'

I take these observations as evidence that the plural morpheme in Yucatec does not head the Number Phrase.[17]

Another functional projection between the nP and the DP which has been proposed is the Quantificational Phrase (QP) (Giusti, 1997) (i.e. DP > QP > NumP > nP > $\sqrt{}$). Given this proposal, we might expect a plural morpheme in some languages to merge at the QP, and we will want to evaluate whether this might be the case for the plural marker in Yucatec Maya. Park (2008) presents evidence that the presence of the plural mor-

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[17]As an anonymous review points out, the presence of the plural marker on the noun in (66d) may be a problem for the DP-adjoined analysis of the plural in Yucatec unless the noun originates as a DP in the reduced relative clause which contains the adjective. In fact, there is evidence that relative clause internal heads are full DPs rather than just NPs (e.g. Borsley (1997); deVries (2002); Koster-Moeller (2012)). Another potential analysis of the plural marking on the noun and the postnominal adjective is that the third person plural cross-reference marker, -*o'ob*, as discussed in examples (60) and (61), is what is marked on the adjective. It might adjoin to the CP, which would be predicted based on the analysis of DP and parallel to CP. This possibility is discussed in more detail in Butler (2011) but a definitive analysis requires further investigation.

pheme *-tul/deul* in Korean results in a distributive interpretation and may be a candidate for QP merge. The sentences in (67) and (68) show that the plural marker *-tul/deul* is optional in collective predicates with a distributive sub-entailment. When *-tul/deul* is present, however, as in (68) the reading is that all of the professors participate.

(67) Swuhakkwa   kyoswu-ka   kyosil-ey   moyessta
     Math-department professor-NOM classroom-LOC gather-PST
     'Professors of a math department gathered in the classroom.' (Park, 2008) (data from Kwak (2003))

(68) 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.' (Park, 2008) (data from Kwak (2003))

The examples in (69) and (70) show that in truly collective predicates (with no distributive sub-entailment), the plural marker *-tul* is infelicitous.[18]

(69) 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.'

(70) ??Swuhak-kwa-nun   kyoswu-**tul**-i   ney myeng-ita
     Math-department-TOP professor-**tul**-NOM four CL-CPL.DC
     'The professors of a math department are a group of four.'

If the plural morpheme in Korean may be a candidate for a QP plural, this might be a potential merge site for the Yucatec plural (since it is higher

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[18]I thank Jae Hoon Choi for verifying these judgments in Korean.

than the root and NumP. In Yucatec, however, the plural morpheme does not show the same properties as does the plural morpheme in Korean. The plural marker *-o'ob* in Yucatec is judged as acceptable with truly collective predicates such as the one in (71) as well as those with distributive sub-entailments in (72) and (73).[19]

(71) In   kiik-o'ob-e' tu   múuch'-u-baj-o'ob   k'íiwik
     A1SG sister-PL-TOP PFV-A3 together-A3-REFL-PL plaza
     'My sisters gathered in the plaza.'

(72) Le   xoknal-o'ob ti'   maaya-o' ya'ab-o'ob
     DEF student-PL PREP Maya-D2 many-B3PL
     'The students of Maya are many.'

(73) In   kiik-o'ob-e'   chowak-tak u   pool-o'ob
     A1SG sister-PL-TOP long-ADJ.PL A3 hair-PL
     'My sisters have long hair.'

Now that we have reviewed evidence that the plural morpheme in Yucatec does not merge at the $\sqrt{}$, the NumP or the QP, in the next sections, I present syntactic and semantic evidence in favor of the analysis of the plural morpheme in Yucatec Maya as adjoined to the DP.

4.4   The Yucatec plural merges at DP

The clearest piece of evidence in favor of the analysis of the plural morpheme in Yucatec as adjoined to the DP is its behavior with conjoined nouns. The

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[19]Thanks to Andy Barss for originally posing this question to me.

example in (74) shows that the plural marker adjoined at the end of a co-ordinated DP can refer to the plurality of the first noun, the second noun, both nouns, or the plurality of the conjunct as a whole (with both individual nouns referring to a single entity).[20]

(74) le   x-ch'úupal yéetel le   ko'olel-o'ob-o'
     DEF FEM-girl   and   DEF woman-PL-D2
     'the girl and the woman' / 'the girl and the women' / 'the girls and the woman' 'the girls and the women'

I will assume the structure in (75), with a maximal DP dominating the coordinate DP and the conjunction as the head of that DP (Progovac, 1997; Munn, 1993). This structure also captures the long-standing intuition that the coordination of two NPs results in an NP and the coordination of two PPs results in a PP, etc. (Progovac, 1998; Jackendoff, 1977; Chomsky, 1981; Gadzar et al., 1985; Sag et al., 1985, *inter alia*).[21] If the plural were merged at the NumP, it would not be possible for it to adjoin to the highest DP and refer to the plurality of the conjunct as a whole (with each individual noun referring to a single entity), as it can do in Yucatec. Nor would we predict that the plural, if it merges at NumP, could refer to the a plural first noun and singular second noun, as it can do in Yucatec.

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[20]Speaker judgments on the acceptability of the four interpretations of the sentence in (74) are somewhat variable (see Butler (2011) for details from a picture-sentence matching acceptability rating task). Two out of four consultants accepted 'the girl and the woman' as an acceptable translation of the sentence in (74). Similarly, two out of four consultants accepted 'the girls and the woman' as an acceptable translation of the sentence in (74). Also see Butler (under review) for experimental evidence for the DP-adjoined analysis of plural morphology in Yucatec from a timed translation task with conjoined nouns.

[21]Thanks to Heidi Harley for mentioning this.

(75) Plural adjoined to highest DP in coordinate DP

```
              DP
            /    \
          DP      -PL
        /    \
      DP      
     /\      /    \
            &      DP
                   /\
```
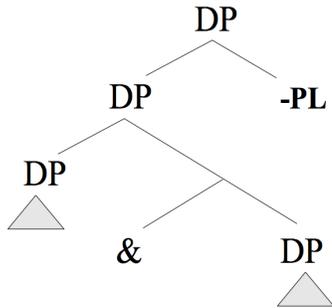
In the next section, I present additional semantic evidence that supports the analysis of the plural morpheme in Yucatec as adjoined to the DP.

4.5   Semantic evidence for DP merge

In this section, I outline additional semantic evidence to support the proposal that the plural morpheme in Yucatec Maya merges at the DP. If the plural morpheme in Yucatec Maya is adjoined to the DP, there are some semantic properties that would be expected to follow from its syntax, given that there is evidence for the DP as the locus of referentiality (Longobardi, 1994; Lyons, 1999, *inter alia*). If this is correct, then we predict the plural morpheme in Yucatec to give rise to such effects. In Yucatec, plural-marked DPs often involve a specific interpretation. According to Enç (1991), specificity is a weaker identity link than definiteness or identity of reference. It involves a subset relation, or "standing in some recoverable relation to a familiar object." This definition of specificity is perhaps closely related to that of Cinque (1990) on "intrinsically referential" arguments, which "refer to spe-

cific members of a set in the mind of the speaker or preestablished discourse"
(Cinque, 1990, 16, see also Pesetsky (1987) for a similar discussion)). Cinque
discusses the differential behavior of *wh*-traces of intrinsically referential arguments. For example, they can escape weak islands and license parasitic
gaps (see also Chung (1994)). If the plural morpheme in Yucatec is adjoined
at the DP, then we might predict semantic effects related to referentiality,
or specificity. In fact, the use of the plural morpheme in Yucatec does give
rise to a specific interpretation. The following examples in (76) and (77)
illustrate this property. In the non-specific interpretation in (76), a person
goes to school wearing a new pair of shoes, and a peer might ask him or her
the question in (76) without plural morphology.

(76) Tumben le   xanab-o'?
     new   DEF shoe-d2
     'Are those shoes new?' CONTEXT: A person comes to school wearing
     a pair of shoes which look new.

If, however, a person goes to a shoe store and sees one pair of shoes that
look somewhat old on a rack with a nubmer of other shoes that look shiny
and new, she or he might ask the question in (77), with plural morphology.

(77) Tumben le   xanab-**o'ob**-o'?
     new   DEF shoe-PL-D2
     'Are those shoes new?' CONTEXT: A person in a shoe store sees one
     pair of shoes that look old among many other shoes that look new.

This referential property of the plural marker in Yucatec Maya may be linked to its syntax in the DP.

5 Conclusion

In this paper, I have adopted the diagnostics outlined by Wiltschko (2008) to analyze the syntax of plural marking in Yucatec Maya. Using Wiltschko's diagnostics, I have provided evidence that the plural morpheme in Yucatec merges as a syntactic adjunct. I have also provided evidence that the plural morpheme in Yucatec does not adjoin to the $\sqrt{}$root, as it does in Halkomelem (Wiltschko, 2008) or the Number Phrase, as it does in Hebrew (Ritter, 1991) and Romance (Bernstein, 1991; Picallo, 1991; Valois, 1991). I outlined syntactic and semantic evidence that the Yucatec plural morpheme adjoins to the DP. This analysis explains a number of otherwise curious facts about plural marking in Yucatec Maya. One heretofore curious fact about plural marking in Yucatec Maya is that it can co-occur with numeral classifiers, a fact that has been systematically ruled out by a number of theories (Borer, 2005; Chierchia, 1998; Greenberg, 1963; Sanches and Slobin, 1973). Now, we can conclude that the restriction on the co-occurrence of plurals and classifiers is a formal syntactic restriction, rather than a functional one, as discussed by Wiltschko (2008) also. Another fact that the DP-adjoined plural analysis of the Yucatec Maya plural can explain is the specific interpretation that arises with the use of the plural marker. Additionally, we observed that the plural

marker in Yucatec, because it is adjoined at the DP can refer to the plurality of a conjunct as a whole.

The syntactic and semantic properties of plural marking in Yucatec Maya discussed in this paper can be used as diagnostics for other DP-plural type languages in the syntactic typology of plural marking. The clear implication of this research is that identical syntax (head of the Number Phrase) does not follow from identity of function (pluralization). Additionally, the syntax of plural marking shows that a wide range of variation in the properties of plural marking across languages can still be captured in a universal syntax, as discussed by Wiltschko (2008, 2011).

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