DETERMINER SHARING AND CYCLICITY IN WH-MOVEMENT[*]

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1. *Introduction*

In determiner sharing structures, a determiner is (apparently) missing from one of the constituents in the second conjunct in a coordinate structure (see Mc-Cawley 1993):

(1)   The boys will wash the dishes, and girls, mop the floor.

This sentence is interpreted as if the determiner in the initial subject *the boys* were also present in the subject in the second conjunct.

In this paper, we examine the properties of this construction in Spanish, and provide an analysis based on Johnson's (2000) and Lin's (2002) proposals for this construction in English. An important part of the analyses proposed by these authors is the claim that determiners are licensed in functional projections above *v*P (see Sportiche 1996). We adopt Lin's (2002) version of this claim, and propose an extension to it by arguing that there are more licensing positions for determiners than originally proposed in that work. Moreover, by examining certain restrictions on word order in determiner sharing in questions, we argue that they provide evidence for the hypothesis put forth in Chomsky 1986, 2000 that wh-movement involves an intermediate step in a position between TP and VP.

This paper is organized as follows. In Section 2, we introduce the basic data and provide an analysis of determiner sharing in non-questions. In Section 3, we extend this analysis to sharing of wh-determiners, and in Section 4 we use this analysis to provide evidence for the claim that wh-movement involves an intermediate step between TP and VP.

2. *Gapping and Determiner Sharing*

Gapping sentences are coordinate structures where T (and, possibly, a verb) is 'missing' from the second and later conjuncts (examples from Lin 2002):

(2) a. Jessica ate an apple and Joanne, an orange.
    b. Jessica ate an apple, and Joanne *ate* an orange.
(3) a. Jessica will referee the hockey game and Jori, time the luge race.
    b. Jessica will referee the hockey game, and Jori *will* time the luge race.

In each of the (a) examples, T (in the case of (2a), the V-T complex) is apparently not present in the second conjunct, and the sentence is interpreted as if the second conjunct contained the same T (and V in (2a)) as the first conjunct (i.e. it has the same interpretation as the corresponding (b) sentence.)[1]

There are two approaches to gapping in the literature. In the *ellipsis*, or *large conjunct* approach, what is coordinated is entire sentences. T is missing from the second and latter conjuncts because of ellipsis (see Neijt 1979, Wilder 1997, Hartmann 2001, Murguia 2004):[2]

(4) a. $[_{TP}$Jessica $[_{V\text{-}T}$ate$]$an apple$]$and $[_{TP}$Joanne $[_{V\text{-}T}$~~ate~~$]$an orange$]$
    b. $[_{TP}$J. will referee the hockey game$]$and $[_{TP}$J. ~~will~~ time the luge race$]$

In the *sharing* or *small conjunct* approach, coordination is below TP. In particular, the subject and T that appear at the beginning of the sentence are not part of the first conjunct; they are part of the higher shared structure (see Siegel 1987, Johnson 1996, Lin 2002). In this approach, there is no ellipsis involved:

(5) a. $[_{TP}$ Jessica ate $[[_{vP}t_{Sbj}\ t_V$ an apple$]$and $[_{vP}$Joanne t_V an orange$]]]$
    b. $[_{TP}$ J. will $[[_{vP}t$ referee the hockey game$]$and $[_{vP}$J. time the luge$\ldots]]]$

In both examples, the first subject is extracted from the first conjunct to its surface position in the shared structure,[3] and the subject in the second conjunct

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[1]It is also possible to have gapping of both T (an auxiliary) and V (a main verb), as in *Jessica will referee the hockey game, and Jori the luge race*. In this paper, we concentrate only on sentences where only T (and anything adjoined to it) is missing.

[2]What is common to all these analyses is coordination of TP and ellipsis in the second conjunct. However, they differ in how ellipsis is implemented (deletion, "reconstruction", etc.)

[3]This is in apparent violation of Ross's (1967) Coordinate Structure Constraint (CSC). As argued by Lin (2002), once this principle is properly formulated, these are in fact not violations of the

remains in its base position in *v*P. In addition, in (2a, 5a), the verb is moved Across-the-Board to T from both conjuncts.

Gapping is also possible in Spanish:[4]

(6) a. Juan fue al cine y María, al parque.
Juan went to.the movies and María to.the park
"Juan went to the movies and Maria went to the park."

b. Juan corrigió los trabajos y María, los exámenes.
Juan graded the papers and María the exams
"Juan graded the papers and María graded the exams."

In the sharing analysis, the initial subject and T in (6a) are shared, i.e. not included in any of the conjuncts:[5]

(7) *Sharing analysis*
Juan went [$_{vP}$*t*$_{Juan}$ *t*$_V$ to the movies] and [$_{vP}$María *t*$_V$ to the park]

In the ellipsis analysis, the conjuncts are TPs, and T (which includes the adjoined verb) is elided in the second conjunct:

(8) *Ellipsis analysis:*
[$_{TP}$Juan went to the movies] and [$_{TP}$María ~~went~~ to the park]

Lin's (2002) evidence for the sharing analysis of gapping in English can easily be applied to this construction in Spanish. Her main arguments are based on the fact that in the sharing analysis (see (7)), the shared subject c-commands both *v*Ps. However, the ellipsis analysis (8) involves coordination of whole clauses, so the first subject does not c-command anything in the second conjunct. We will only apply one of Lin's arguments for this claim to Spanish. The following example illustrates this point:

(9) Cada estudiante$_i$ leyó *El Quijote* y su$_i$ madre, *La Celestina*.
each student$_i$ read *El Quijote* and his$_i$ mother *La Celestina*
"Each student$_i$ read *El Quijote* and his$_i$ mother read *La Celestina*."

CSC. See also footnote 6.

[4]For ease of exposition, the English translations of the Spanish examples do not involve any gapping.

[5]For ease of exposition, we only use English glosses in the analysis of Spanish examples.

In this example, the first subject *cada estudiante* "each student" binds a pronoun in the second conjunct. This shows that this subject cannot be part of the coordination; it must be higher. Hence, what is coordinated is *v*P. On the other hand, in clear cases of coordination of TP (i.e. with nothing 'missing' from the second conjunct), this binding is not possible:[6]

(10)   ??Cada estudiante$_i$ leyó *El Quijote* y   su$_i$ madre leyó *La*
           each student$_i$ read *El Quijote* and his$_i$ mother read *La*
         Celestina.
         Celestina
         "Each student$_i$ read *El Quijote* and his$_i$ mother read *La Celestina*."

This is predicted by the sharing analysis, but not by the ellipsis analysis. We therefore follow Lin 2002 in adopting the former.

In *determiner sharing* structures, a determiner is also missing from the non-initial conjuncts (see McCawley 1993, Johnson 2000 and Lin 2002):[7]

(11) a. The boys will wash the dishes and, girls mop the floor.
      b. The boys will wash the dishes and *the* girls will mop the floor.

In (11a), a determiner is missing from the subject in the second conjunct, and is interpreted as if it had the same determiner as the subject in the first conjunct. The resulting interpretation is the same as (11b). The following are two relevant examples of determiner sharing from Spanish:[8]

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[6]There is a potential problem for the analysis if *cada estudiante* 'each student' (10) is allowed to undergo QR:

(i)   each student$_i$ [$_{t_i}$ read *El Quijote*] and [his$_i$ mother read *La Celestina*]

As argued in several works (see Ruys 1993, Fox 2000, Lin 2002 and references cited there), QR out of a conjunct in a coordinate structure is possible as long as the moved element binds a variable in all other conjuncts, which is precisely the case in (i). However, this specific example is ruled out due to Fox's (2000) Scope Economy: QR of *each student* does not cross another scope bearing element. We would like to thank an anonymous reviewer for pointing out this potential problem.

[7]As noted by the authors cited above, not all determiners can participate in determiner sharing. For instance, it is not possible with *a*, *that* or numerals, but it is possible with most other determiners. In Spanish, the list of determiners that cannot be 'shared' is even greater (see footnote 8). There is no known explanation for these facts.

[8]The number of determiners that can participate in determiner sharing is very reduced in Spanish. Whereas it is possible with *bastante* 'enough/several', *cuánto* 'how much/how many', *demasi-*

(12) a. Ni muchos niños han leído los libros ni niñas revisado los
   neither many boys have read the books nor girls reviewed the
   artículos.
   articles
   "Neither many boys have read the books nor *many* girls *have* reviewed the articles."

   b. Ni demasiados niños comieron las manzanas ni niñas las
   neither too.many boys ate   the apples nor girls the
   peras.
   pears
   "Neither too many boys ate the apples nor *too many* girls *ate* the pears."

In (12a), the first subject contains the determiner *muchos* "many". The subject in the second conjunct is missing this determiner. Nevertheless, it is interpreted as if the determiner were present, as shown in the translation. (12b) is a similar example except that there is no auxiliary and the 'missing' determiner is *demasiados* "too many".

As first shown by McCawley (1993), determiner sharing implies gapping: in addition to the determiner, T must also be missing from the second conjunct in English. This is also true of determiner sharing in Spanish.[9] For instance, if an auxiliary is added to the second conjunct in (12a), the result is (13a), which is not grammatical. Similarly, adding a tensed verb to the second conjunct in (12b) also results in ungrammaticality, as shown in (13b).

(13) a. *Ni muchos niños han leído los libros ni niñas *han*
    neither many boys have read the books nor girls *have*
   revisado los artículos.
   reviewed the articles
   "Neither many boys have read the books nor many girls have reviewed the articles."

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ado 'too much/too many' *mucho* 'much/many', *poco* 'little/few', *qué* 'what/which', *suficiente* 'enough' and *varios* 'several', it is not possible with *cada* 'each', *el* 'the', *ningún* 'no/any', *todo* 'all', *un* 'a', numerals, demonstratives and possessives. We are not aware of any systematic way of distinguishing the determiners in the two groups.
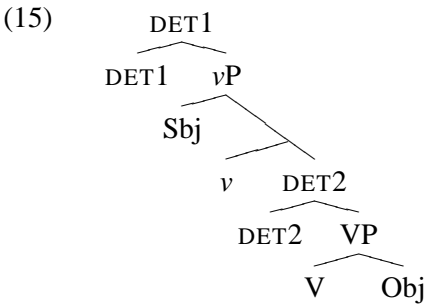
[9] As we will see below, not all cases of determiner sharing entail a missing T in the second conjunct. In particular, when the shared determiner is a question wh-word, T can be present in the second conjunct. See Section 3.

    b. *Ni   demasiados niños comieron las manzanas ni   niñas
       neither too.many boys ate   the apples   nor girls
      comieron las peras.
      ate   the pears
      "Neither too many boys ate the apples nor too many girls ate the
      pears."

Given the logic of the sharing analysis, this must mean that both D and T are shared in the structure. That is, D and T are not part of the coordination. They are above the coordinated *v*Ps. For instance, (12a) must have the following analysis:

(14)   Neither *many*$_D$ boys *have*$_T$ [$_{vP}$read the books]nor [$_{vP}$girls reviewed the article]

In order to implement this observation, Lin 2002 adopts a version of Sportiche's (1996) DP-partitioning hypothesis (Lin bases her analysis on proposals made in Johnson 2000). In particular, she proposes that there are two determiner-related positions (labeled DET1/DET2 in (15)), one above *v*P and another one above VP:

(15)
```
          DET1
        /      \
     DET1      vP
            /      \
          Sbj
                /      \
               v      DET2
                    /      \
                 DET2      VP
                        /      \
                       V      Obj
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Furthermore, there are certain requirements imposed on the relation between DET and determiners in argument positions. First, a determiner must be in the c-command domain of DET. The determiners in subject and object position in (15) satisfy this requirement. Furthermore, DET must be adjoined to a DP by Spellout. This is achieved by moving DP to DET; the subject moves to DET1, and the object to DET2:

(16)   [Sbj+DET1 [$_{vP}t_{Sbj}$ [Obj+DET2 [$_{VP}$V t_{Obj}]]]]

Finally, DET also imposes a restriction on the spellout of the determiner: a determiner can be spelled out overtly only if the DP it heads is adjoined to DET. In the normal case, a DP is always adjoined to a DET, so its D head is spelled out overtly.

This theory of determiners allows Lin to explain why determiner sharing implies gapping in English, and her analysis extends straightforwardly to Spanish. For instance, consider (12a) above. In this sentence, the determiner *many* is 'missing' from the second conjunct, and as shown in (13a), T (i.e. the auxiliary) must be missing as well. (12a) has the following structure:[10]

(17)
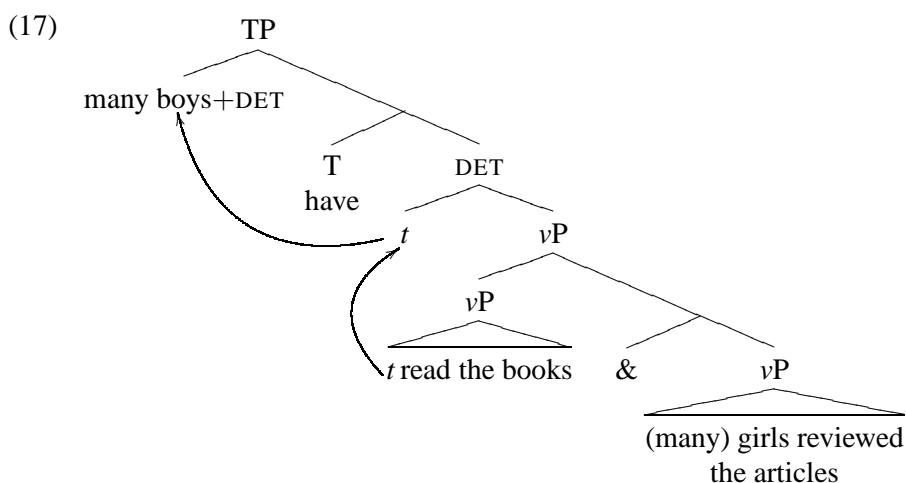
In this structure, the requirements on DET are satisfied by adjoining to it the subject from the first conjunct (and subject+DET moves further to [Spec, TP]). Since this DP is adjoined to DET, its D head is spelled out as *muchos* 'many'. The subject in the second conjunct does not move to DET, so its D head is not spelled out overtly. Thus, in this analysis, what is shared in the coordination is DET, and conditions on the pronunciation of determiners give the illusion that the subject determiner is shared by both conjuncts. More importantly, the analysis derives the fact that T must be shared as well (see (13)). Given the structure in (17), if the conjuncts contain T, they must also contain DET, since the former c-commands the latter. Since sharing of DET is a necessary ingredient of the determiner sharing construction, it follows that this construction is not possible unless T is shared as well.

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[10]We represent determiners that are not realized overtly by enclosing them in parentheses.

As noted in Johnson 2000 and Lin 2002, it is not possible to share determiners in object position in English:[11]

(18)   *John will wash the dishes and Bill, mop floor.

This follows from the structure in (15). Since the object determiner is shared, DET2 and everything above it is excluded from the conjuncts. Thus, the second conjunct cannot contain a subject or a V (the latter having moved to *v*). Thus, sharing the object determiner can only result in a structure which is homophonous with a sentence in which just the NPs in the object are coordinated:

(19)   John will wash the dishes and floor.
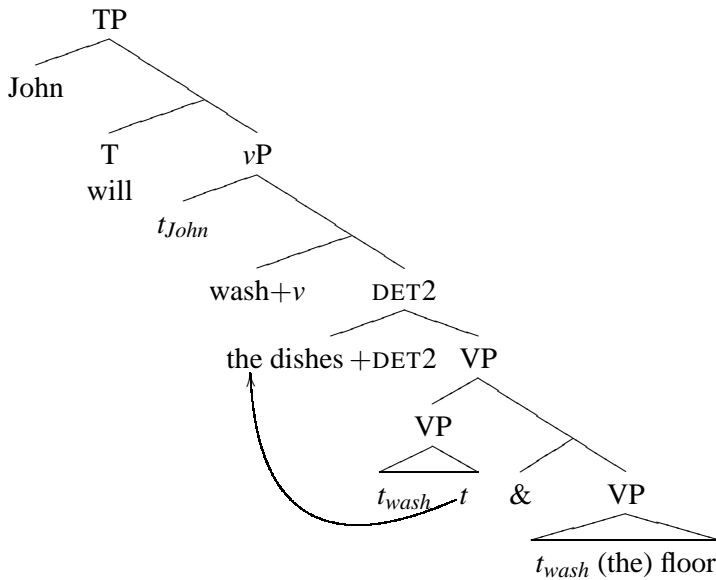
In this respect, Spanish contrasts sharply with English; determiner sharing in object position *is* possible in this language:

(20)   Ni   Juan leyó demasiados libros, ni   Pedro revistas.
         neither Juan read too.many   books nor Pedro magazines
         "Neither Juan read too many books, nor Pedro read too many maga-
         zines."

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[11]Determiner sharing in object position is possible in English when the object is initial in the second conjunct. This also follows from the analysis. See Johnson 2000 and Lin 2002.

(21) Ni   Juan ha comido demasiadas manzanas, ni   Pedro bebido
      neither Juan has eaten   too.many   apples   nor Pedro drunk
      cervezas.
      beers
      "Neither J. has eaten too many apples, nor P. has drunk to many
      beers."

As expected, determiner sharing also entails gapping in this case:[12]

(22) *Ni   Juan leyó demasiados libros, ni   Pedro *leyó* revistas.
       neither Juan read too.many   books nor Pedro *read* magazines
      "Neither Juan read too many books, nor Pedro read too many maga-
      zines."
(23) *Ni   Juan ha comido demasiadas manzanas, ni   Pedro *ha*
       neither Juan has eaten   too.many   apples   nor Pedro *has*
      bebido cervezas.
      drunk beers
      "Neither Juan has eaten too many apples, nor Pedro has drunk to
      many beers."

We would like to relate this difference between the two languages to a well-
known difference in their syntax: while word order is quite rigid in English, it is
not in Spanish. In particular, VOS orders in Spanish are quite natural:

(24) Leyó demasiados libros Juan.
      read too.many   books Juan
      "John read too many books."

We assume that, in this order, the subject is in its base position in vP, and the
object is in a derived position above vP, which we take to be the specifier of
Agr_OP:[13]

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[12]Examples (22-23) are grammatical in the irrelevant reading in which the object in the second conjunct is understood as a bare plural.

[13]We have chosen the label 'Agr_OP' simply for convenience. All that is needed for the analysis is some VP-external position which can account for the attested VOS order in Spanish. Whatever this position is, it is not available for overt movement in English, where the VOS order is not possible, even if, as proposed in Johnson 1991 and Lasnik 1999, English objects move out of VP.

(25) $[_{TP}V+v+Agr_O+T$ $[_{Agr_OP}$Object t_{Agr_O} $[_{vP}$Subject t_v $[_{VP}t_V$ $t_{Object}]]]]$

In order to account for determiner sharing in object position, we also need a DET
position above Agr$_O$P. Its syntax is the same as the other DET positions proposed
in Lin 2002 and outlined above: it licenses a determiner in its c-command do-
main (in this case, the one in the object in the specifier of Agr$_O$P), and a DP
must adjoin to it by Spellout (i.e. the one in the specifier of Agr$_O$P). Under this
analysis, a sentence like (20) involves coordination of vP, with movement of the
object in the first conjunct to Agr$_O$P and DET:

(26)   J. read [too many books+DET $[_{Agr_OP}t$ $[_{vP}t_{Juan}$ t_V $t]$ & $[_{vP}$Pedro . . .]]]

In English, the specifier of Agr$_O$P is not available for (overt) movement. This
implies that determiner sharing in object position is not possible in this language
(even assuming that there is an object-related DET above Agr$_O$P).

    To summarize so far, Spanish offers additional evidence for Johnson's (2000)
and Lin's (2002) general approach to gapping and determiner sharing. Further-
more, the fact that determiner sharing in object position is possible in this lan-
guage argues for an extension of Sportiche's (1996) and Lin's (2002) theory of
determiners which makes an 'extra' DET position available to objects higher in
the structure.

3. *Determiner Sharing in Questions*

    Determiner sharing is also possible with wh-determiners:

(27)   ¿Cuántos   niños han leído libros y   niñas revisado revistas?
          how.many boys have read books and girls reviewed magazines
         "How many boys have read books and how many girls have reviewed
         magazines?"
(28)   ¿Cuántos   libros has   leído y   revistas   revisado?
          how.many books have.2SG read and magazines reviewed
         "How many books have you read and how many magazines have
         you reviewed?"

These two examples involve sharing of the wh-determiner *cuántos* "how many"
in subject (27) and object (28) positions. Their syntax is essentially the same as

their non-wh counterparts, with further movement of the phrase containing the wh-determiner to the specifier of CP:[14]

(29) [$_{CP}$how many boys have [$_{DET}$*t* [$_{vP}$*t* read books] and . . .
        [$_{vP}$(how many) girls reviewed magazines]]]

(30) [$_{CP}$how many books have [$_{DET}$*t* [$_{Agr_OP}$ read *t*]and . . .
        [$_{Agr_OP}$(how many) magazines reviewed]]]

Surprisingly, wh-determiner sharing does not necessarily involve gapping; unlike in non-questions, T can optionally be present in the second conjunct:[15]

(31) ¿Cuántos   niños han leído libros y   niñas *han* revisado
       how.many boys have read books and girls *have* reviewed
       revistas?
       magazines
       "How many boys have read books and how many girls have reviewed magazines?"

(32) ¿Cuántos   libros has   leído y   revistas *has*
       how.many books have.2SG read and magazines *have.*2SG
       revisado?
       reviewed
       "How many books have you read and how many magazines have you reviewed?"

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[14]In (30), the conjuncts are Agr$_O$P, rather than *v*P. As will be discussed in more detail in the next section, this has to do with the fact that the order of constituents in the second conjunct is OV, rather than the expected VO. In both (29, 30), we omit any movement that the DPs might undergo to positions other than DET and Spec of CP.

[15]Lin (2002) argues that gapping *is* necessarily involved in wh-determiner sharing in English relative clauses, citing examples like the following:

(i)   We're looking for the child you told us about, . . .
           . . . whose brother presented a slide show and sister (*presented) a linguistics talk.

Similar examples in Spanish are also ungrammatical if they do not involve gapping. All the examples we use in the text involve the wh-question determiner *how many*. This difference between Lin's examples and ours might be due to differences in the syntax of wh-movement in questions and relative clauses. We leave this as a matter for future research.

This suggests that there is a DET position above CP, which we label DET_{wh}, available to wh-determiners:

(33) $[_{\text{DET}_{\text{wh}}} \text{DP}_{\text{wh}} + \text{DET}_{\text{wh}} \, [_{\text{CP}} \, t \, \text{C TP} \,]]$

The syntax of this DET position is the same as the other ones discussed here: it licenses the determiner in the DP in the specifier of CP, and this DP must adjoin to DET by Spellout.

    Since DET_{wh} is above TP, sharing of wh-determiners does not necessarily involve sharing of T. (31-32) can thus be analyzed in terms of conjunction of CP. For instance, (31) has the following structure:

(34)
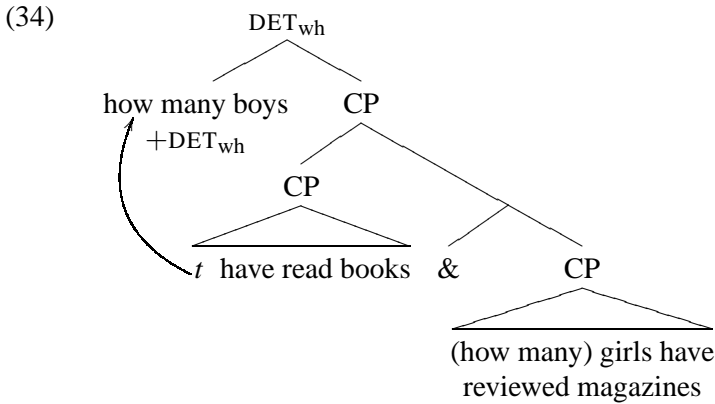
Therefore, determiner sharing in questions reveals a further extension of the theory of determiners adopted in this paper. At least in some cases, there is a wh-related DET position above CP, in addition to the ones proposed previously.

    So far, we have seen that there are DET positions at several levels in the structure of a clause: above VP, vP, Agr_{o}P, and CP. This might suggest that DET positions can be generated anywhere in the clause. This is not the case. For instance, we must assume that there is no DET position immediately above TP. If this were possible, it should also then be possible to coordinate TP below DET. This would result in a structure in which a non-wh subject determiner is shared and T is present in both conjuncts:

(35)   *$[_{\text{DET}} \text{Sbj}_1 + \text{DET} \, [[_{\text{TP}} t \, \text{T} \ldots] \, \& \, [_{\text{TP}} \text{Sbj}_2 \, \text{T} \ldots]]]$

As we saw in the previous section, examples of this sort are not grammatical (see (13)). We conclude that DET cannot be generated immediately above TP.[16]

4. *Cyclicity in Wh-movement*

In the previous section, we have not paid much attention to the word order of constituents in wh-determiner sharing. In this section, we argue that the order of constituents in these constructions in Spanish provides evidence for Chomsky's (1986) claim that there is an intermediate step between VP and TP in wh-movement.

In most cases, word order in the second conjunct in wh-determiner sharing is a straightforward matter. Consider first sentences in which T is not shared. (31, 32), repeated below as (36a, 37a), are relevant examples. In the second conjunct, the wh-phrase with the unpronounced determiner *how many* must precede the verb:

(36) a. ¿Cuántos niños han leído libros y niñas han revisado
      how.many boys have read books and girls have reviewed
      revistas?
      magazines
      "How many boys have read books and how many girls have reviewed magazines?"

   b. *¿Cuántos niños han leído libros y han revisado niñas
      how.many boys have read books and have reviewed girls
      revistas?
      magazines

   c. *¿Cuántos niños han leído libros y han revisado revistas
      how.many boys have read books and have reviewed magazines
      niñas?
      girls

(37) a. ¿Cuántos libros has leído y revistas has
      how.many books have.2SG read and magazines have.2SG
      revisado?
      reviewed
      "How many books have you read and how many magazines have you reviewed?"

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[16]Ideally, there should be an explanation for the specific distribution of DET. We leave this as a question for future research.

  b. *¿Cuántos   libros has   leído y   has   revisado
      how.many books have.2SG read and have.2SG reviewed
  revistas?
  magazines

This is a direct consequence of the structure proposed for these sentences in the previous section (see (34)). This structure involves coordination of CP. Thus, the wh-phrase (which contains an unpronounced wh-determiner) in this conjunct must move to the specifier of CP. The consequence, as desired, is that it must precede the verb.

   Consider next cases of wh-determiner sharing with sharing of T in which the 'missing' wh-determiner is in the subject. In this case too, the wh-phrase in the second conjunct must precede the verb:

(38) a. ¿Cuántos   niños han leído libros y   niñas revisado revistas?
        how.many boys have read books and girls reviewed magazines
        "How many boys have read books and how many girls have reviewed magazines?"
     b. *¿Cuántos   niños han leído libros y   revisado niñas
         how.many boys read books and   have reviewed girls
     revistas?
     magazines
     c. *¿Cuántos   niños han leído libros y   revisado revistas
         how.many boys read books and   have reviewed magazines
     niñas?
     girls

Recall that this structure involves coordination of *v*P (see (29)). The structure of the second conjunct is the following (ignoring a possible DET position for the object above VP):

(39)   [$_{vP}$(how many) girls reviewed [$_{VP}$$t_V$ magazines]]

The only way in which the verb could precede the subject would be by movement of the verb to a position higher than *v*P. However, there is no such position in the second conjunct, since, by hypothesis, these sentences involve coordination of *v*P. The consequence is that the wh-subject must precede the verb.

When the shared wh-determiner is in the object, the facts are basically the same; the wh-phrase in the second conjunct must precede the verb:

(40) a. ¿Cuántos libros has   leído y revistas   revisado?
         how.many books have.2SG read and magazines reviewed
         "How many books have you read and how many magazines have you reviewed?"
     b. *¿Cuántos libros has   leído y revisado revistas?
          how.many books have.2SG read and reviewed magazines

Clearly, the wh-object in the second conjunct *(how many) magazines* is not in its base position. It must move to a position above vP, i.e. Agr$_O$P (see Section 3). This means that this structure involves coordination of Agr$_O$P. The structure of the second conjunct is then:

(41)
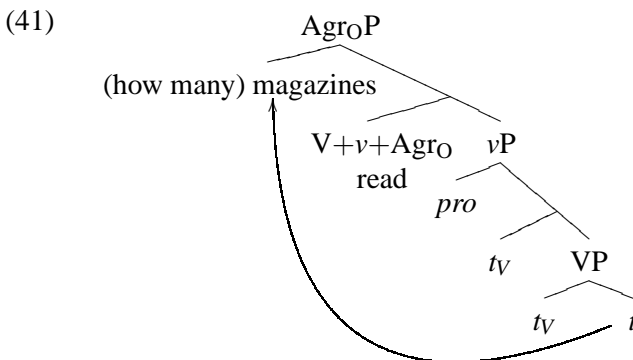
The question that must be answered now is why this movement to Agr$_O$P is necessary. The answer is straightforward: as proposed in Chomsky 1986, 2000, wh-phrases *always* move to an intermediate position between TP and VP (see also Fox 2000 and Nissenbaum 2000.) In fact, wh-determiner sharing structures provide new kind of evidence for this hypothesis. In the references cited above, the evidence given for the hypothesis is either theory internal or motivated by considerations of the syntax-semantics interface. The evidence presented here has to do with word order.

However, before we rush to this conclusion, there are a few possible objections that need to be addressed. First, as is well-known, in Spanish questions containing more than one wh-phrase, only one of them undergoes wh-movement. This might be seen as an objection to our proposal that the wh-phrase in the second conjunct in (40) undergoes wh-movement to Agr$_O$P, since the wh-phrase in

the first conjunct is also moved. Closer examination of wh-movement in coordinate structures shows that this is not a real objection. In coordinate structures in general, movement of a wh-phrase in a conjunct does not prevent movement of wh-phrases in other conjuncts. The following is a relevant example which does not involve determiner sharing or any other type of 'missing' elements:

(42)   Juan me preguntó $[_{CP}[$qué   libros$]$ había   leído $t]$ y …
        Juan me asked $[_{CP}[$which books$]$ had.1SG read $t]$ and

   a. … $[_{CP}[$qué   revistas $]$ había   revisado $t]$
          $[_{CP}[$which magazines$]$ had.1SG reviewed $t]$

   b. *… $[_{CP}$había   revisado qué   revistas $]$
          $[_{CP}$had.1SG reviewed which magazines$]$
        "Juan asked me which books I had read and which magazines I had reviewed."

This is precisely what we assumed above in our analysis for the determiner sharing structure in (40). The wh-phrases in both conjuncts must move.

   Another objection to the analysis has to do with the size of the conjuncts. In our analysis, there must be some way of preventing coordination of vP instead of Agr$_O$P. If coordination of vP were allowed, there would be no position for the wh-phrase in the second conjunct to move to, and (40b), with the verb preceding the wh-phrase, would incorrectly be predicted to be grammatical. The answer to this objection is the same as the answer to the previous objection. The wh-phrase in the second conjunct, just like the one in the first, must undergo movement. Thus, the second conjunct must be large enough to provide a landing site for this movement (i.e. it must be Agr$_O$P, not vP).

   An alternative to the analysis we have proposed would be the following. In wh-determiner sharing, the wh-phrase in the second conjunct must precede the verb because of some kind of parallelism requirement on word order in coordinate structures. Since the wh-object in the first conjunct in (40) must precede the verb, the wh-object in the second conjunct must do so too. This parallelism requirement might seem like a natural condition on coordination, but it is in fact wrong. This can be shown by adding an overt subject to the sentence in (40). As shown in the following example, the subject does not need to be in parallel positions in both conjuncts; it is possible for the subject to be final in the first conjunct, but initial in the second one:

(43) ¿Cuántos   libros   ha leído *Juan* y   *Pedro* revistas   revisado?
      how.many books has read *Juan* and *Pedro* magazines reviewed
      "How many books has Juan read and how many magazines has Pe-
      dro reviewed?"

Finally, there is a possible theory-internal objection to our analysis. We have identified the intermediate position for wh-movement as the specifier of Agr$_O$P. However, in Chomsky 2000, this position is the (higher) specifier of *v*P. The main reason for our claim has to do with the position of overt subjects with respect to the wh-object. In particular, an overt subject can appear after the verb in the second conjunct:

(44) ¿Cuántos   libros   ha leído Juan y   revistas   revisado *Pedro*?
       how.many books has read Juan and magazines reviewed *Pedro*
      "How many books has Juan read and how many magazines has Pe-
      dro reviewed?"

If the wh-object were in the higher specifier of *v*P, we would not expect this order to be possible, since both the object and the subject would be in a position higher than the verb (and *v*). On the other hand, in our analysis, the second conjunct has the following structure, which results in the order verb-subject, as desired:

(45)
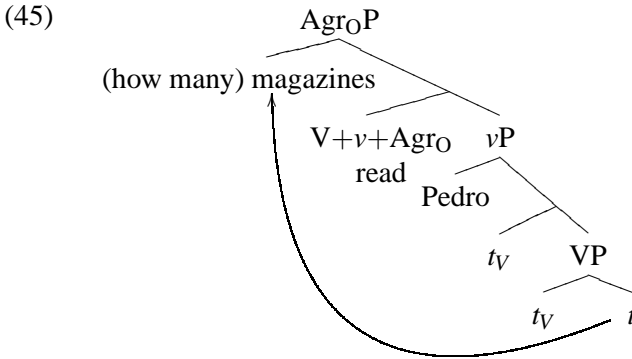
To conclude this section, we have argued that a close examination of word order facts in the second conjunct in wh-determiner sharing provides evidence for the hypothesis that wh-movement involves an intermediate step between TP and VP. Furthermore, we have argued that this intermediate position is in a projection higher than *v*P which we have labeled Agr$_O$P.

5. *Conclusion*

In this paper, we have extended Johnson's (2000) and Lin's (2002) analysis of determiner sharing to several cases of this construction in Spanish. Furthermore, we have argued that this construction requires an extension of Lin's (2002) theory of determiners, so that DET positions are available above Agr_OP and CP. Finally, in the last section, we used this analysis to provide evidence for Chomsky's (1986, 2000) hypothesis that wh-movement must go through an intermediate position located between TP and VP.

REFERENCES

Chomsky, Noam. 1986. *Barriers*. (= *Linguistic Inquiry Monographs*, 13.) Cambridge, Mass.: MIT Press.

Chomsky, Noam. 2000. "Minimalist Inquiries: The Framework". *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik* ed. by Roger Martin, David Michaels & Juan Uriagereka, 89-155. Cambridge, Mass.: MIT Press.

Fox, Danny. 2000. *Economy and Semantic Interpretation*. (= *Linguistic Inquiry Monographs*, 35.) Cambridge, Mass.: MIT Press & MIT Working Papers in Linguistics.

Hartmann, Katharina. 2001. *Right Node Raising and Gapping: Interface Conditions on Prosodic Deletion*. Amsterdam & Philadelphia: John Benjamins.

Johnson, Kyle. 1991. "Object Positions". *Natural Language and Linguistic Theory* 9.577-636.

Johnson, Kyle. 1996. "In Search of the English Middle Field". Ms., University of Massachusetts, Amherst.

Johnson, Kyle. 2000. "Few Dogs Eat Whiskas or Cats Alpo". *University of Massachusetts Occasional Papers in Linguistics*, 21, 59-82. Graduate Linguistics Student Association, University of Massachusetts, Amherst.

Lasnik, Howard. 1999. "Pseudogapping Puzzles". *Fragments: Studies in Ellipsis and Gapping* ed. by Shalom Lappin & Elabbas Benmamoun, 141-174. Oxford & New York: Oxford University Press.

Lin, Vivian I-Wen. 2002. *Coordination and Sharing at the Interfaces*. Ph.D. dissertation, MIT, Cambridge, Mass.

McCawley, J. D. 1993. "Gapping with Shared Operators". *Proceedings of the Nineteenth Annual Meeting of the Berkeley Linguistics Society (BLS 19), Berkeley, Calif., 12–15 February 1993: General Session and Parasession on Semantic Typology and Semantic Universals* ed. by Joshua S. Guenter, Bar-

bara A. Kaiser & Cheryl C. Zoll, 245-254. Berkeley Linguistics Society, University of California, Berkeley.

Murguia, Elixabete. 2004. *Syntactic Identity and Locality Restrictions on Verbal Ellipsis*. Ph.D. dissertation, University of Maryland, College Park.

Neijt, Anneke. 1979. *Gapping: A Contribution to Sentence Grammar*. (= *Studies in Generative Grammar*, 7.) Dordrecht: Foris.

Nissenbaum, Jonathan. 2000. *Investigations of Covert Phrase Movement*. Ph.D. dissertation, MIT, Cambridge, Mass.

Ross, John. 1967. *Constraints on Variables in Syntax*. Ph.D. dissertation, MIT, Cambridge, Mass.

Ruys, Eddy. 1993. *The Scope of Indefinites*. Ph.D. dissertation, Universiteit Utrecht.

Siegel, Muffy E. A. 1987. "Compositionality, Case and the Scope of Auxiliaries". *Linguistics and Philosophy* 10.53-75.

Sportiche, Dominique. 1996. "Clitic Constructions". *Phrase Structure and the Lexicon* (= *Studies in Natural Language and Linguistic Theory*, 33) ed. by Johan Rooryck & Laurie Zaring, 213-276. Dordrecht: Kluwer.

Wilder, Chris. 1997. "Some Properties of Ellipsis in Coordination". *Studies on Universal Grammar and Typological Variation* (= *Linguistik Aktuell/Linguistics Today*, 13) ed. by Artemis Alexiadou & T. Alan Hall, 59-107. Amsterdam & Philadelphia: John Benjamins.